United States
Environmental Protection
Agency

Office of Air Quality
Planning and Standards
Research Triangle Park, NC 27711

EPA 450/3-91-020b
September 1993

Air

EPA

Dry Cleaning Facilities - Background Information for Promulgated Standards

Final EIS

NESHAP

CONTENTS

CONTENTS (CONCLUDED)

LIST OF TABLES

1.0 SUMMARY

On December 9, 1991, the Environmental Protection Agency (EPA) proposed national emission standards for hazardous air pollutants for perchloroethylene (PCE) emissions from dry cleaning facilities (56 FR 64382) under authority of section 112 of the Clean Air Act. Public comments were requested on the proposal in the Federal Register. There were 34 commenters composed mainly of States, environmental groups, industry trade associations, and dry cleaning equipment vendors.

Public comments were also requested in a notice of availability of new information on control of PCE emissions during clothing transfer at dry cleaning facilities that use transfer dry cleaning machines. This notice was published on October 1, 1992 (57 FR 45363). Eight comment letters were received.

All of the comments that were submitted, along with responses to these comments, are summarized in this document. The summary of comments and responses serves as the basis for the revisions made to the standards between proposal and promulgation.

1.1 SUMMARY OF CHANGES SINCE PROPOSAL

Since proposal, several important changes have been made to the regulation. The changes affect new and existing dry cleaning machines located at major and area sources. At proposal, owners or operators of new dry-to-dry machines located at major or area sources were given a choice of installing carbon adsorbers or refrigerated condensers as process vent control. At promulgation, all new dry cleaning machines located at major or area sources are required to install refrigerated condensers.

The owner or operator of a new dry-to-dry machine located at a major source is also required to install a carbon adsorber to

control the PCE emissions remaining in the dry cleaning machine drum at the end of the dry cleaning cycle.

At proposal, new transfer machine systems were allowed and control requirements for these systems were specified. At promulgation, new transfer machine systems are prohibited through a regulatory requirement prohibiting PCE emissions from clothing transfer between the washer and the dryer. This requirement cannot be met by new transfer machine systems even if these systems are enclosed in room enclosures.

At proposal, existing uncontrolled dry-to-dry machines located at major or area sources were given a choice of installing carbon adsorbers or refrigerated condensers as process vent control. Existing uncontrolled transfer machine systems located at area sources were required to install carbon adsorbers. At promulgation, existing uncontrolled dry-to-dry machines and transfer machine systems are required to install refrigerated condensers. Existing controlled machines that already have a carbon adsorber, however, are not required to install a refrigerated condenser for process vent control.

At proposal, existing uncontrolled transfer machine systems located at major sources were required to install carbon adsorbers. At promulgation, existing uncontrolled transfer machine systems located at major sources are required to install refrigerated condensers as process vent control. Existing controlled transfer machine systems at major sources that already have a carbon adsorber, however, are not required to install a refrigerated condenser for process vent control. For control of fugitive emissions, all existing transfer machine systems located at major sources must be enclosed within a room enclosure that exhausts to a carbon adsorber.

At proposal, the low solvent consumption exemption for process vent control at area sources was 220 gallons of PCE per year for a dry-to-dry machine and 300 gallons of PCE per year for a transfer machine system. At promulgation, the low solvent consumption exemption for process vent control has been lowered and now applies to the total PCE solvent consumption of all

machines at the dry cleaning facility rather than on a per machine basis. At promulgation, the low solvent consumption exemption for process vent control is 140 gallons of PCE per year for a dry cleaning facility with only dry-to-dry machines or both dry-to-dry machines and transfer machine systems, and 200 gallons of PCE per year for a dry cleaning facility with only transfer machines systems.

The level of PCE consumption distinguishing major from area sources is the same as at proposal; however, this now applies to the total PCE consumption of all machines at the facility rather than on a per machine basis. The level of PCE consumption distinguishing a major source from an area source is 2,100 gallons of PCE per year for a source with only dry-to-dry machines, and 1,800 gallons of PCE per year for a source with only transfer machine systems or both dry-to-dry machines and transfer machine systems.

At proposal, pollution prevention practices (such as leak detection and repair) were required only for those dry cleaning machines above the low solvent consumption exemption for process vent control. At promulgation, <u>all</u> PCE dry cleaning facilities must implement pollution prevention practices and operate their dry cleaning equipment according to the manufacturer's specifications.

There were no monitoring requirements included at proposal. The promulgated standards now require periodic monitoring of process vent control equipment. When operating a refrigerated condenser on a dry-to-dry machine, a transfer machine system dryer, or a reclaimer, the temperature on the outlet side of the refrigerated condenser must be measured and recorded once per week. When operating a refrigerated condenser on a transfer machine system washer, the difference between the inlet and outlet temperatures of the exhaust from the washer as it passes through the refrigerated condenser must be measured and recorded once per week.

When operating an existing carbon adsorber to control process vent emissions, a colorimetric indicator tube must be

used to measure and record the PCE level in the carbon adsorber exhaust once per week. Periodic desorption for carbon adsorbers is no longer specifically required. Instead, the owner or operator must follow the manufacturer's specifications for the proper operation of a carbon adsorber.

1.2 SUMMARY OF IMPACTS OF PROMULGATED ACTION

1.2.1 Alternatives to Promulgation Action

The regulatory alternatives are discussed in chapter 6.0 of the background information document (BID) for the proposed standards (EPA 450/3-91-020a). Included with these regulatory alternatives are estimates of the level of emission control which would be achieved if that alternative were selected as the basis for standards.

At proposal, the estimated reduction in PCE emissions achieved using a carbon adsorber was assumed to be equal to or greater than that achieved by refrigerated condensers based on measurements under optimal testing situations. Subsequent to proposal, information on solvent mileage became available from the results of a survey conducted by the California Air Resources Board. This information (which included data from over 2,000 dry cleaning facilities) clearly indicates that the performance of carbon adsorbers in actual practice achieves lower emission reduction than refrigerated condensers.

The estimates of control efficiency associated with refrigerated condensers, however, have not changed since proposal and are included in the proposal BID. As discussed above, the promulgated regulation requires the use of refrigerated condensers and, as a result, the estimates of the levels of emission control achieved by the promulgated standards remain essentially the same as that associated with the proposed standards.

1.2.2 Environmental Impacts of Promulgated Action

The environmental impacts are discussed in chapter 7.0 of the BID of the proposed standards. The emission reduction expected to occur as a result of the control devices required by the promulgated standards is 6,600 megagrams per year (Mg/yr)

[7,300 tons per year (tpy)], an increase of 1,200 Mg/yr (1,300 tpy) compared to proposal due to lowering the low solvent consumption exemption for process vent control. The emission reduction expected to occur as a result of leak detection and repair required by the promulgated standards is 25,800 Mg/yr (28,400 tpy).

Because all existing, uncontrolled dry cleaning machines are required to install refrigerated condensers instead of carbon adsorbers under the final standards, there will be a reduction in water pollution and solid waste impacts from those impacts projected at proposal. Note that the impacts for new dry cleaning machines do not change between proposal and promulgation because these impacts were based at proposal on the assumption that all new machines would be dry-to-dry machines controlled by refrigerated condensers.

Carbon adsorbers produce more wastewater and solid waste than refrigerated condensers due to their use of steam for desorption and periodic replacement of the carbon bed. The additional water pollution impacts expected to occur as a result of the promulgated standards are 0.2 Mg/yr (0.2 tpy), a decrease of 0.1 Mg/yr (0.1 tpy) compared to proposal. The additional solid waste impacts expected to occur as a result of the promulgated standards are 2 Mg/yr (2 tpy), a decrease of 2 Mg/yr (2 tpy) compared to proposal.

With the changes noted in this section, the analysis of environmental impact in the proposal BID now becomes the Final Environmental Impact Statement for the promulgated standards.

1.2.3 Energy and Economic Impacts of Promulgated Action

The energy impacts are discussed in chapter 7.0 of the Background Information Document of the proposed standards. The additional energy requirements expected to occur as a result of operating the control devices to meet the promulgated standards are 430,700 British thermal units per year (Btu/yr) [3 gigawatts per year (GW/yr)], an increase of 72,000 Btu/yr (1 Gw/yr) compared to proposal. This increase is due to lowering the low solvent consumption exemption for process vent control.

The economic impacts are discussed in the proposal document "Economic Impact of Regulatory Controls in the Dry Cleaning Industry." The economic impact assessment includes a market component and a financial component. The market component focuses on the adjustment of market prices and quantity of dry cleaning as a result of complying with the standards. The financial component focuses on the ability of firms to obtain the money to buy the control equipment.

The upward market price adjustment due to the promulgated standards is projected to range between 0.25 and 2.5 percent in various markets, with the largest increases being found in small rural markets. The downward adjustment in total dry cleaning is projected to be about 0.5 percent, an increase of 0.3 percent since proposal. If the whole quantity adjustment were translated into closures rather than reduction in output at many cleaners, the net closures would be projected to be just under 300, an increase of about 270 since proposal. This increase is due to lowering the low solvent consumption exemption for process vent control.

The financial analysis indicates that firms in below-average financial condition may face difficulty in obtaining the required funds to purchase control equipment from traditional loan sources such as banks. The analysis of the promulgated standards projects between 0 and 1,300 firms will be in this category. These firms will either obtain other financing (vendor-aided, relatives, personal assets, etc.), close, or sell their firm. The analysis of the proposed standards projected between 0 and 670 firms would be in this category. The increase is due to lowering the low solvent consumption exemption for process vent control.

2.0 SUMMARY OF PUBLIC COMMENTS

A total of 42 letters commenting on the proposed standards, the notice of availability of new information, and the background information document (BID) for the proposed standards were received. Because no one requested a public hearing on the proposed standards, no public hearing was held. A list of commenters, their affiliations, and the EPA docket number assigned to their correspondence is given in Table 2-1.

For the purpose of orderly presentation, the comments have been categorized under the following topics:

1. Selection of Pollutants;
2. Selection of Affected Facility;
3. Emission Control Technology;
4. Modification and Reconstruction;
5. Economic Impacts;
6. Environmental Impacts;
7. Selection of MACT and GACT;
8. Selection of Format for Standards;
9. Emission Limits and Performance Testing;
10. Selection of Equipment and Work Practice Specifications;
11. Test Methods and Monitoring;
12. Wording of the Regulation;
13. Equivalency; and
14. Miscellaneous.

TABLE 2-1. LIST OF COMMENTERS ON PROPOSED NATIONAL EMISSION STANDARDS FOR HAZARDOUS AIR POLLUTANTS FOR SOURCE CATEGORIES: PERCHLOROETHYLENE EMISSIONS FROM DRY CLEANING FACILITIES

Docket item number[a]	Commenter and affiliation
D-1	Mr. John D'Aloia, Jr. Senior Associate Deuel & Associates, Incorporated Environmental Science and Engineering 311 West Alma Street St. Marys, Kansas 66536
D-2	Mr. Jeff Johnson Equipment Sales Manager PROS 420 North 5th Street Suite 480 Minneapolis, Minnesota 55401
D-3	Mr. Michael R. Lake Chief, Engineering Division Air Pollution Control District County of San Diego 9150 Chesapeake Drive San Diego, California 92123-1096
D-4	Mr. Kenneth W. Holt Special Programs Group Department of Health and Human Services Centers for Disease Control Atlanta, Georgia 30333
D-5	Ms. Lorna S. McBarnette Executive Deputy Commissioner New York State Department of Health Corning Tower The Governor Nelson A. Rockefeller Empire State Plaza Albany, New York 12237
D-6	Mr. Peter D. Venturini, Chief Stationary Source Division State of California Air Resources Board 1102 Q Street Sacramento, California 95812

TABLE 2-1. LIST OF COMMENTERS ON PROPOSED NATIONAL EMISSION STANDARDS FOR HAZARDOUS AIR POLLUTANTS FOR SOURCE CATEGORIES: PERCHLOROETHYLENE EMISSIONS FROM DRY CLEANING FACILITIES (CONTINUED)

Docket item number[a]	Commenter and affiliation
D-7	Mr. Michael R. Lake Chief, Engineering Division Air Pollution Control District County of San Diego 9150 Chesapeake Drive San Diego, California 92123-1096
D-8	Mr. Kenneth Eng, Chief Air Compliance Branch U. S. Environmental Protection Agency Region II Jacob K. Javitz Federal Building 26 Federal Plaza New York, New York 10278
D-9	Mr. Jack Lauber New York State Department of Environmental Conservation 50 Wolf Road Albany, New York 12233-3254
D-10	Mr. R. Darryl Banks Deputy Commissioner New York State Department of Environmental Conservation 50 Wolf Road Albany, New York 12233-3254
D-11	Ms. Helen G. Goldberger Ms. E. Gail Suchman Assistant Attorneys General State of New York Department of Law 120 Broadway New York, New York 10271
D-12	Mr. Robert G. Smith President Kleen-Rite 4444 Gustine Avenue St. Louis, Missouri 63116

TABLE 2-1. LIST OF COMMENTERS ON PROPOSED NATIONAL EMISSION STANDARDS FOR HAZARDOUS AIR POLLUTANTS FOR SOURCE CATEGORIES: PERCHLOROETHYLENE EMISSIONS FROM DRY CLEANING FACILITIES (CONTINUED)

Docket item number[a]	Commenter and affiliation
D-13	Mr. Frank C. Torres Keller and Heckman 1001 G Street, N.W. Suite 500 West Washington, D.C. 20001
D-14	Mr. Timothy A. Vanderver, Jr. et al Patton, Boggs, & Blow 2550 M Street, N.W. Washington, D.C. 20037-1350
D-15	Mr. Samuel A. Bleicher Miles & Stockbridge Metropolitan Square 1450 G Street, N.W. Suite 445 Washington, D.C. 20005
D-16	Ms. Nancy Kim Director Division of Environmental Health Assessment State of New York Department of Health Center for Environmental Health 2 University Place Albany, New York 12203-3399
D-17	Mr. Albert F. Appleton Commissioner New York City Department of Environmental Protection 59-17 Junction Boulevard Elmhurst, New York 11373-5107
D-18	Mr. Eric C. Mather Petro Environmental, Incorporated 9267 Cincinnati-Dayton Road West Chester, Ohio 45069

TABLE 2-1. LIST OF COMMENTERS ON PROPOSED NATIONAL EMISSION STANDARDS FOR HAZARDOUS AIR POLLUTANTS FOR SOURCE CATEGORIES: PERCHLOROETHYLENE EMISSIONS FROM DRY CLEANING FACILITIES (CONTINUED)

Docket item number[a]	Commenter and affiliation
D-19	Ms. Connie L. Deford Environmental Affairs Chemicals & Metals Dow U.S.A. 2020 Dow Center Midland, Michigan 48674
D-20	Ms. Katy Wolf Executive Director Institute for Research and Technical Assistance 3727 West 6th Street, Suite 505 Los Angeles, California 90020
D-21	Mr. W. Caffey Norman, III Patton, Boggs, & Blow 2550 M Street, N.W. Washington, D.C. 20037
D-22	Mr. William Juris Engineering Section Division of Air Pollution Control State of Ohio Environmental Protection Agency 1800 Watermark Drive Columbus, Ohio 43266-0149
D-23	Mr. John Gove Principal Air Pollution Control Engineer Bureau of Air Management State of Connecticut Department of Environmental Protection 165 Capitol Avenue Hartford, Connecticut 06106

TABLE 2-1. LIST OF COMMENTERS ON PROPOSED NATIONAL EMISSION STANDARDS FOR HAZARDOUS AIR POLLUTANTS FOR SOURCE CATEGORIES: PERCHLOROETHYLENE EMISSIONS FROM DRY CLEANING FACILITIES (CONTINUED)

Docket item number[a]	Commenter and affiliation
D-24	Ms. Margaret M. Round Program Analyst Northeast States for Coordinated Air Use Management 85 Merrimac Street Boston, Massachusetts 02114
D-25	Ms. Deborah A. Sheiman Resource Specialist Natural Resources Defense Council 1350 New York Avenue, N.W. Washington, D.C. 20005
D-26	Mr. Richard A. Valentinetti Director Vermont Air Pollution Control Division Agency of Natural Resources 103 South Main Street, Building 3 South Waterbury, Vermont 05671-0402
D-27	Mr. William L. Weissler President Diversitron Corporation 61-37 Fresh Meadow Lane Fresh Meadows, New York 11365
D-28	Mr. Marvin Rosenstein Chief Pesticides and Toxic Substance Branch U. S. Environmental Protection Agency Region I J. F. Kennedy Federal Building Boston, Massachusetts 02203-2211
D-29	Ms. Margaret M. Round Program Analyst Northeast States for Coordinated Air Use Management 85 Merrimac Street Boston, Massachusetts 02114

TABLE 2-1. LIST OF COMMENTERS ON PROPOSED NATIONAL EMISSION STANDARDS FOR HAZARDOUS AIR POLLUTANTS FOR SOURCE CATEGORIES: PERCHLOROETHYLENE EMISSIONS FROM DRY CLEANING FACILITIES (CONTINUED)

Docket item number[a]	Commenter and affiliation
D-30	Mr. James D. Boyd Executive Officer Air Resources Board 1102 Q Street Sacramento, California 95812
D-31	Mr. William E. Fisher International Fabricare Institute 12251 Tech Road Silver Spring, Maryland 20904
D-32	Mr. Peter D. Robertson Patton, Boggs, & Blow 2550 M Street, N.W. Washington, D.C. 20037-1350
D-33	Mr. James D. Boyd Executive Officer Air Resources Board 1102 Q Street Sacramento, California 95812
D-34	Ms. Nancy Kim Director Division of Environmental Health Assessment State of New York Department of Health Center for Environmental Health 2 University Place Albany, New York 12203-3399
L-1	Mr. Rob Raney Division Engineer Division of Pollution Control Metropolitan Government of Nashville and Davidson County 311-23rd Avenue, North Nashville, Tennessee 37203

TABLE 2-1. LIST OF COMMENTERS ON PROPOSED NATIONAL EMISSION STANDARDS FOR HAZARDOUS AIR POLLUTANTS FOR SOURCE CATEGORIES: PERCHLOROETHYLENE EMISSIONS FROM DRY CLEANING FACILITIES (CONTINUED)

Docket item number[a]	Commenter and affiliation
L-2	Mr. Edward O. Sullivan Deputy Commissioner New York State Department of Environmental Conservation 50 Wolf Road Albany, New York 12233
L-3	Mr. Peter D. Robertson Patton, Boggs, & Blow 2550 M Street, N.W. Washington, D.C. 20037-1350
L-4	Mr. Michael A. Nash Senior Counsel Minnesota Mining and Manufacturing Co. Post Office Box 33428 St. Paul, Minnesota 55133-3428
L-5	Ms. Barbara Warren Project Coordinator NY Toxics Project Consumer Policy Institute 101 Truman Avenue Yonkers, New York 10703-1057
L-6	Mr. Robert D. Fletcher, Chief Toxic Air Contaminant Control Branch Stationary Source Division State of California Air Resources Board 2020 L Street Sacramento, California 95812
L-7	Ms. Katy Wolf Executive Director Institute for Research and Technical Assistance 2800 Olympic Blvd., Suite 101 Santa Monica, California 90404

TABLE 2-1. LIST OF COMMENTERS ON PROPOSED NATIONAL EMISSION STANDARDS FOR HAZARDOUS AIR POLLUTANTS FOR SOURCE CATEGORIES: PERCHLOROETHYLENE EMISSIONS FROM DRY CLEANING FACILITIES (CONCLUDED)

Docket item number[a]	Commenter and affiliation
L-8	Mr. Frank Kean Kean's The Cleaner 9323 Mammoth Avenue Baton Rouge, Louisiana 70814

[a]The docket number for this project is A-88-11, IV. Dockets are on file at EPA Headquarters in Washington, D.C.

2.1 SELECTION OF POLLUTANTS

Comment: Two commenters (IV-D-20, IV-D-25) stated that 1,1,1-trichloroethane (1,1,1-TCA) dry cleaners should have been regulated in the proposed national emission standards for hazardous air pollutants (NESHAP). One commenter (IV-D-20) reported that in spite of an upcoming ban on 1,1,1-TCA and trichlorotrifluoroethane (CFC-113), due to their contribution to stratospheric ozone depletion, vendors are still offering for sale these chemicals and machines specifically designed to use these chemicals. The commenter noted that, in some cases, CFC-113 machines have been designed that can be converted to perchloroethylene (PCE) but, in other cases, the dry cleaner using these solvents will have to purchase a new dry cleaning machine within a few years.

This commenter recognized that the EPA may not have the authority under the Clean Air Act (Act) to ban the sale of new or reconditioned CFC-113 nonconvertible units because CFC-113 is not a listed hazardous air pollutant (HAP). However, to protect dry cleaners from vendors who do not tell them the truth, the commenter urged the EPA to ban the sale of "nonconvertible" 1,1,1-TCA machines and CFC-113 machines, if the EPA has the authority to do so.

The other commenter (IV-D-25) asserted that the EPA has no authority to exempt 1,1,1-TCA dry cleaners. The commenter pointed out that the Act directs the EPA to set industry-wide standards that will control emissions of all HAP's associated with a particular source category rather than use the chemical-by-chemical approach adopted in the past. This commenter stated that the EPA is ignoring this mandate. The commenter argued that exempting 1,1,1-TCA dry cleaners from the regulation could have the inadvertent effect of encouraging dry cleaners to switch to 1,1,1-TCA, even though this chemical is scheduled to be phased out in the year 2002 under the stratospheric ozone protection provisions of the Act. The commenter further argued that failure to include 1,1,1-TCA solvent use within the scope of the dry cleaning standard is

inconsistent with section 604(c) of the Act, which provides for a scheduled phasing out in the production and consumption of Class I ozone depleters.

Response: There are several reasons for not regulating CFC-113. It is used less commonly than PCE because it is a less aggressive cleaning solvent than PCE and it is more expensive. As reported in a 1989 dry cleaning survey, only 6 percent of the plants responding to the survey had CFC-113 machines. They used them for special cleaning purposes, such as to clean leather. Although CFC-113 may be well suited for cleaning special items, in general, it may not clean other types of clothing as efficiently as PCE. Moreover, the use of CFC-113 has been declining in recent years.

As the commenter mentioned, because CFC-113 is not listed as one of the 189 HAP's in section 112(b) of the Act, the EPA does not have the authority under the dry cleaning NESHAP to regulate the use of CFC-113 or equipment associated with its use. However, as the commenter pointed out, the use of CFC-113 is being regulated elsewhere in the Act. Under Title VI, CFC-113 is scheduled to be phased out by the year 2002 because of its contribution to stratospheric ozone depletion.

There are several reasons for not regulating 1,1,1-TCA dry cleaners. As discussed in the proposal preamble, there are only about 50 dry cleaning facilities in the United States that are known to use 1,1,1-TCA, and all of these facilities use equipment to control the emissions from these machines. The higher cost of 1,1,1-TCA (about $15 per gallon compared to about $3 per gallon for PCE in 1989) gives owners or operators an incentive to extend their solvent mileage through the use of emission control to recover and reuse 1,1,1-TCA. As a result, the national emissions of 1,1,1-TCA from dry cleaners are low (380 Mg/yr or less), representing only about 0.1 percent of the total annual 1,1,1-TCA emissions of 336,000 Mg.

Similar to CFC-113, the chemical 1,1,1-TCA is also being phased out by the year 1996 due to its contributions to stratospheric ozone depletion. It also has aggressive properties

making it an unsuitable solvent for most dry cleaning purposes. For these reasons, 1,1,1-TCA is unlikely to be the solvent of choice for dry cleaning owners or operators purchasing new machines.

2.2 SELECTION OF AFFECTED FACILITY

2.2.1 Collocation

Comment: Four commenters (IV-D-22, IV-D-25, IV-D-26, IV-D-28) recommended that the criteria for determining a major source be based on the entire dry cleaning facility instead of each dry cleaning machine. One commenter (IV-D-28) stated that the definition of source used in the proposed NESHAP refers only to the consumption of PCE for an individual machine. This commenter pointed out that by using this proposed definition of source only certain machines would be considered major sources. This commenter believed that the collective consumption of PCE should be considered from all machines located within a contiguous area under common control.

One commenter (IV-D-22) noted that the exemption criteria given in paragraphs (b) and (c) of section 63.320 of the proposal regulation are stated in terms of the amount of PCE consumed per year by machine, but the exemption was established based on annual receipts by facility. The commenter pointed out that because a facility can have more than one machine, the exemption criteria should be stated on a facility basis.

Three commenters (IV-D-25, IV-D-26, IV-D-28) pointed out that a potential problem could arise with the proposed definition of source when a dry cleaning facility has more than one machine located in the same building. The commenters emphasized that each machine individually may not be a major source; however, when combined, the machines could consume enough PCE to be considered a major source. Using the proposed definition of source, these commenters explained that (in this particular case) each machine would be required to meet only generally available control technology (GACT) instead of maximum achievable control technology (MACT). One commenter (IV-D-26) asked what would happen if a dry cleaning operation has 4 dry-to-dry machines,

each consuming 1,000 gallons of PCE per year. The commenter pointed out that such a facility under the proposed rule would not have to apply MACT to these units, only the less stringent GACT, even though total PCE consumption by the facility as a whole would exceed the cutoff for a major source.

One commenter (IV-D-24) requested that special permit conditions be given to facilities that operate each machine at levels less than the applicability thresholds, but which have the potential to exceed such thresholds in total.

Response: The final rule has been revised to base the applicability of the standard on the average aggregate annual PCE consumption of all machines located at a dry cleaning facility calculated on a monthly basis. The definition of a major source in the Act includes sources "located within a common area and under common control." Because multiple units located at a single dry cleaning facility would be under common control, the applicability of this NESHAP for major sources has been revised to be consistent with the language of the Act. The final NESHAP has also been revised to define an area source on a facility-wide basis rather than a machine basis when determining solvent consumption levels. This approach was selected to ensure consistency and to simplify the rule.

No special permit requirements would be necessary for facilities with multiple machines. All sources with only dry-to-dry machines using more than 2,100 gallons of PCE per year would be required to meet MACT whether one machine or several machines are located at that source. All other sources using more than 1,800 gallons of PCE per year would also be required to meet MACT, regardless of the number of machines located at that source. In addition, all sources must maintain monthly records of their consumption and calculate their average annual PCE consumption on a monthly basis.

In the proposed NESHAP, the applicability of the standard was based on the annual PCE consumption of an individual dry cleaning machine. Few dry cleaners, however, have more than one machine per facility, and the majority of facilities with more

than one machine are the larger commercial and industrial sized dry cleaners. Few, if any, of these larger facilities are affected by revising the definition of applicability because each machine used at these larger facilities would consume more PCE than the low consumption exemption.

It is possible that a dry cleaning facility with two machines that would have been subject to GACT under the proposed rule may now be subject to MACT, considering their total PCE consumption. It is also possible that a dry cleaning facility with a large machine that is subject to MACT might also contain a small dry cleaning machine that would now be subject to MACT. However, these situations are uncommon and the overall impact of this revision is minimal.

2.2.2 Applicability Criteria

Comment: One commenter (IV-D-25) argued that the applicability criteria given in the proposal NESHAP for small existing area source dry cleaners are illegal. This commenter cited the legislative history from the Congressional Record:

> No such authority has been retained in the final statute. While various categories and subcategories may be established, emissions from all facilities within a category or subcategory must be controlled by the MACT standard. The managers specifically disapprove of EPA's practice--evident in recent new source performance standards under section 111 of the current law--for example, the air oxidation and distillation standards--of establishing cutoffs that result in excluding some sources within the category or subcategory from the emission limitations or control measures otherwise required.

Based on this guidance, the commenter stated that the EPA must apply its control standards to all existing area source dry cleaning machines, regardless of solvent consumption levels.

Response: The Act clearly states that all major sources are to be regulated under MACT standards. Area sources, however, may be regulated under GACT and the final rule uses GACT, rather than MACT, to regulate area sources. The Act provides the Administrator some discretion in regulating area sources under GACT. For example, the Act does not state that every area source

within an area source category must be regulated. In determining GACT for area sources, the low solvent consumption exemptions were established on the basis of cost versus benefits and economic impacts. The smallest sources were exempt from regulation because, in the judgment of the Administrator, the balance between the costs and benefits of regulation, along with the economic impacts in terms of business closures and financial failures were considered unreasonable.

2.2.3 Exempting Coin-Operated Facilities

Comment: Two commenters (IV-D-23, IV-D-25) stressed that coin-operated (coin-op) facilities should not be exempted from the NESHAP. One commenter (IV-D-23) believed, however, that these facilities should be given special requirements. This commenter pointed out that the State of Michigan specifies minimum requirements for supervision, ventilation, operation, and maintenance of coin-op facilities.

The other commenter (IV-D-25) pointed out that, by not choosing to "list" coin-op machines, the EPA proposed to exempt whole classes of dry cleaning machines. This commenter added that public exposure is especially high from these types of dry cleaners, which are typically found in laundromat settings. This commenter added that people, often accompanied by young children, may spend several hours a week in these settings. This commenter explained that laundry workers, and their children, may be present for many hours each day, particularly at family-owned cleaners. This commenter added that these facilities may be located in shopping centers with stores, restaurants, and offices nearby.

This commenter cited the criterion in section 112(c)(3):

> The Administrator shall list under this subsection each category or subcategory of area sources which the Administrator finds presents a threat of adverse effects to human health or the environment (by such sources individually or in the aggregate) warranting regulation under this section.

The commenter explained that coin-op machines satisfy this criterion and must be regulated. The commenter argued that the

EPA cannot rely on future trends to address a current public health concern. The commenter stated that since 47 percent of coin-op machines are currently controlled, the EPA must establish MACT-based emissions control achieved by the best 12 percent of existing sources in this subcategory.

Response: Considering aggregate PCE emissions of coin-op dry cleaning facilities from a national perspective, these dry cleaning facilities do not present a threat of adverse effects to human health or the environment. The PCE emissions from these facilities, on a national level, are 900 Mg/yr. Compared to the overall PCE emissions of 84,600 Mg/yr from the PCE dry cleaning category as a whole, coin-op facilities represent about 1 percent of nationwide emissions. Because the PCE emissions from these facilities are so low, they do not warrant regulation under this NESHAP. If, however, local authorities feel that coin-op dry cleaning facilities present problems in certain situations, then nothing in the NESHAP prevents these authorities from adopting local ordinances to address these problems.

2.3 EMISSION CONTROL TECHNOLOGY

2.3.1 Refrigerated Condensers

Comment: One commenter (IV-D-02) stated that the standards, as currently written, do not allow industrial dry-to-dry machines to use refrigerated condenser vapor recovery devices. This commenter asserted that a PROS refrigerated condenser manufactured by his company, if properly sized, would be able to cope with these large machines and should, therefore, be included as an option for vapor recovery.

Response: The proposed NESHAP did not prevent industrial dry-to-dry machines at major sources from using refrigerated condensers. Previous information from dry cleaning machine and control equipment manufacturers indicated that there were no refrigerated condensers being used to control PCE emissions from industrial dry cleaning machines. Information provided by the commenter and an industrial dry cleaner trade association following proposal indicates that there are industrial sized refrigerated condensers in operation at dry cleaning facilities.

In addition, information available since proposal from a data base compiled from a survey of approximately 2,000 dry cleaners conducted by the California Air Resources Board (CARB) reveals that the solvent mileage achieved in actual practice by a refrigerated condenser is greater than that achieved by a carbon adsorber. Solvent mileage is the ratio of clothes cleaned to the amount of solvent consumed. Although air emissions are only one of several factors that determine solvent mileage, significantly better solvent mileage is indicative of lower air emissions. Consequently, this new information lends the EPA to conclude that refrigerated condensers achieve significantly lower air emissions in actual practice than carbon adsorbers. Because a refrigerated condenser results in lower air emissions, all new and uncontrolled major source dry cleaning machines are required by the final standards to install refrigerated condensers.

Comment: One commenter (IV-D-27) believed that the cost of a refrigerated water chiller should be included in the cost of operating a refrigerated condenser. The commenter noted that cooling water for a refrigerated condenser must be below 75 ^{o}F to keep the condenser operating properly. He added that plants that use recirculating water towers to comply with local ordinances or to conserve water to minimize sewer costs, and that are located in areas that are hot and humid, will not have inlet water below 75 ^{o}F. The commenter explained that they would be forced to operate with a refrigerated water chiller.

Response: The range in the costs of refrigerated condensers used in the cost analysis is quite broad and one reason for this is that this range reflects the costs associated with refrigerated condensers without water chillers, as well as refrigerated condensers with water chillers. The capital costs estimates of a refrigerated condenser range from $6,300 to $10,800, and the annual operating costs range from $1,670 to $2,800. The standards, however, do not require the use of a water cooled refrigerated condenser, and the condenser could be water or air cooled.

Comment: One commenter (IV-D-27) submitted data to support his claim that refrigerated condensers achieve less than 95 percent reduction in PCE emissions when applied to a dry-to-dry machine and less than 85 percent reduction in PCE emissions when applied to a transfer machine system.

Response: As with any piece of equipment, a refrigerated condenser may be poorly operated. For example, if the owner or operator does not operate the refrigerated condenser to achieve maximum performance (such as cooling to 45 ^{o}F) then it is very likely it would not achieve high control efficiency. The NESHAP, however, requires the owner or operator of a dry cleaning system to operate and maintain the dry cleaning system, as well as its emission control equipment, according to the manufacturer's specifications and recommendations. Such operation will ensure that refrigerated condensers achieve the high emission control efficiencies they are capable of achieving.

2.3.2 Additional Requirements for Hamper Enclosures and Room Enclosures

Comment: One commenter (IV-L-02) felt that additional requirements for hamper enclosures and room enclosures should be given in the final regulation. The commenter suggested the following: exhaust velocities, typical local exhaust volumes to properly ventilate the room, and exhausting the enclosures to an air pollution control device that achieves 5 parts per million (ppm) or less.

Response: The unique circumstances of each dry cleaner, such as the size of the room, size and location of dry cleaning machine(s), as well as the type of dry cleaning system(s), including the ancillary and emission control equipment used will determine design and operating parameters, such as exhaust velocities. It is not possible to include specific and detailed design and operating requirements, such as those mentioned by the commenter, in standards which would apply to all dry cleaners under all circumstances without exception.

2.3.3 Transfer Machine System Emissions

Comment: One commenter (IV-L-03) disagreed with EPA's estimate that nearly one third of all PCE emissions from transfer machine systems occur during the clothing transfer step between the washer and the dryer. This commenter stated that they are currently gathering data to measure the PCE loss during transfer; however, this work has not been completed. The commenter stated that once completed, the data would be shared with EPA. One commenter (IV-L-07) stated that the worker exposure levels and the PCE emissions are higher for transfer machine systems than for dry-to-dry machines.

Response: Due to the wide variation in operating circumstances, there is substantial uncertainty in the emissions estimates from transfer machine systems, and variation both above and below the estimates used for an average transfer machine system can be expected. It is estimated that an uncontrolled transfer machine system on average emits a total of 9.0 lb of PCE per 100 lb of articles cleaned. The emissions from the clothing transfer step are estimated to be 2.5 lb of PCE per 100 lb of articles cleaned. Based on these estimates, approximately one-fourth (25 percent) of the PCE emissions from transfer machine systems occur during the clothing transfer step between the washer and the dryer.

The EPA agrees that the PCE emissions from uncontrolled transfer machine systems are greater than the PCE emissions from uncontrolled dry-to-dry machines. In addition, the EPA agrees that the clothing transfer emissions from a transfer machine system contribute to worker exposure levels.

2.3.4 Fugitive Emissions

Comment: One commenter (IV-D-26) contended that because about half of the PCE emissions at a dry cleaning facility are fugitive emissions, the NESHAP should control emissions from all processes at a facility rather than only those from a particular piece of equipment.

Response: There are two types of PCE emissions at dry cleaning facilities: process vent emissions and fugitive

emissions. Process vent emissions will be reduced by requirements for process vent control devices. Fugitive emissions will be reduced by requirements to implement pollution prevention practices, such as leak detection and repair, the proper handling of cartridge filters, and storing all PCE and wastes that contain PCE in solvent tanks or containers with no perceptible leaks.

2.3.5 Occupational Safety and Health Administration's Permissible Exposure Level

Comment: One commenter (IV-D-27) refuted the EPA's statement that transfer machine systems could not meet the Occupational Safety and Health Administration's (OSHA's) permissible exposure level (PEL) of 25 ppm and submitted data to support his claim. This commenter also cited data showing operator exposure from unvented dry-to-dry machines at 200 to 300 ppm during unloading and asserted that these types of machines will have difficulty meeting the prescribed OSHA levels.

Response: As the commenter stated, it is possible for transfer machine systems to achieve the OSHA PEL if the owners tighten work practices and increase room ventilation. In fact, claims have been made that as many as 40 percent of existing transfer machine systems are currently meeting this requirement.

As the commenter mentioned, it is also possible that some dry-to-dry machines may have difficulty meeting the prescribed OSHA levels. Nothing in the NESHAP, however, affects the ability of a dry cleaner or any dry cleaning machine to meet the OSHA PEL.

2.3.6 Diversitron Solvation® System

Comment: One commenter (IV-D-27) submitted data to support his claim that the Diversitron Solvation® System is capable of achieving greater than 99 percent reduction in PCE emissions. He added that the capital cost of a Solvation® System can be as low as $6,000.

This commenter listed several advantages of the Solvation® System over carbon adsorbers, explaining that steam for carbon

adsorber regeneration requires a minimum of 227 gallons of water whereas a Solvation® System uses about 20 gallons. The commenter stated that each time a carbon adsorber is desorbed, between 4 and 8 gallons of contaminated separator water are generated. The commenter added that, in some localities, this contaminated water cannot be routed to a sewer and must be picked up by a hazardous waste disposal company at a considerable cost. The commenter claimed that the Solvation® System generated far less contaminated water.

The commenter further explained that carbon adsorbers require a fan motor to be run throughout the day. The commenter explained that Solvation® System motors run only during the deodorize/aeration and open door cycles, after which the motor is turned off. The commenter noted that this results in no additional electricity cost.

The commenter also claimed that plants that have replaced carbon adsorbers with Solvation® Systems report an increase in solvent mileage ranging between 30 and 60 percent, and a commensurate reduction in PCE purchased.

The commenter added that the size, weight, and design of the Solvation® System would eliminate rigging costs ($300 to $700); eliminate large, custom ductwork costs ($300 to $1,000); and reduce floor space requirements to 2.5 square feet. The commenter also stated that electrical or self-contained plants without the boiler capacity required for a carbon adsorber (3.5 to 4.5 horsepower) could be controlled with a Solvation® System, which requires only fractional boiler capacity.

Response: As discussed in the volume I background information document (BID), data show that a carbon adsorber is capable of achieving emission control efficiencies well in excess of 95 percent under optimal testing conditions. It is not surprising, therefore, that some data is available showing a control efficiency of 99 percent for the Diversitron Solvation® System with an integral carbon adsorber under certain conditions. The central question, however, is not what level of performance this emission control equipment is capable of achieving under

some short-term idealized period of operation, but what level of performance this equipment is capable of achieving under normal operating conditions over the long term.

The data submitted by the commenter suggests only that if a Diversitron Solvation® System is equipped with a small integral carbon adsorber it may be capable of achieving levels of performance equivalent to those achieved under optimal testing conditions by a large carbon adsorber alone. However, there remain questions whether the Diversitron Solvation® System, as currently sold, includes a carbon adsorber or not and, if so, exactly how this carbon adsorber is operated. Questions also remain concerning whether or not the Diversitron Solvation® System with its small integral carbon adsorber can consistently achieve high levels of emission reduction over the long term or whether these levels can be achieved only under optimal, test conditions.

This question of long term performance is very important. Although carbon adsorbers have been demonstrated as capable of achieving high levels of emission reduction under controlled, optimal testing conditions, it has been shown that such levels of control are difficult to duplicate in actual field practice over extended periods of time. Data available from a survey by CARB (representing approximately 2,000 dry cleaners), which was undertaken following proposal of the NESHAP, shows that the solvent mileage achieved in actual practice by a refrigerated condenser is much greater (i.e., twice as much) than that achieved by a carbon adsorber. Although air emissions are only one of several factors that determine solvent mileage, significantly better solvent mileage is indicative of lower air emissions.

This commenter, however, or any other manufacturer with a technology capable of achieving levels of emission reduction equal to MACT for major sources or GACT for area sources can petition the Administrator for a determination of equivalency. For an emission control system to be considered equivalent to the emission control systems required in the NESHAP, the petitioner

must provide data adequate to demonstrate that the technology is equivalent in terms of long-term emission control performance and does not have greater multi-media effects than the use of a refrigerated condenser.

Comment: One commenter (IV-D-27) pointed out that the concentration of PCE in the vent exhaust from a refrigerated condenser is 1,000 times greater than what the Diversitron Solvation® System emits to the atmosphere and 200 times greater than what carbon adsorbers emit. The commenter argued that allowing these high levels of PCE emissions negates the purpose of the regulation.

Response: Emissions from a vented dry-to-dry machine controlled with a refrigerated condenser occur only when the machine door is opened at the conclusion of the dry cleaning cycle. A fan is used to draw fresh air from the room through the machine door opening, venting the PCE remaining in the machine drum vapor space to the atmosphere in a matter of seconds. Consequently, although the concentration of PCE in these vapors may be much higher than those from a carbon adsorber or a Diversitron Solvation® System, the volume of vapor is small and the quantity or amount of PCE emitted to the atmosphere is very small.

As stated in the previous response, results from a survey of dry cleaners conducted by CARB indicated that, in actual practice, a refrigerated condenser achieves much greater solvent mileage (twice as much) than a carbon adsorber. Although air emissions are only one of several factors that determine solvent mileage, significantly better solvent mileage is indicative of lower air emissions.

Without information about the flow rate and the duration of the venting interval, in addition to the PCE concentration it is not possible to determine the performance of the Diversitron Solvation® System and compare it to a refrigerated condenser or a carbon adsorber.

Comment: One commenter (IV-D-10) stated that, according to the manufacturer of the Diversitron Solvation® Solvent Recovery

system, a carbon adsorber is supplied as an integral part of that Solvation® System. The commenter also related that Diversitron has not manufactured the Solvation® System without a carbon adsorber for over a decade. The commenter believed that the data about the Diversitron Solvation® System used in developing the NESHAP were outdated and requested that the EPA reevaluate the appropriateness of considering this technology as MACT.

Response: If, as the commenter stated, an existing Diversitron Solvation® Solvent Recovery System is operated in conjunction with an existing carbon adsorber that is integral to its system on an existing major source dry cleaning machine, and if the existing carbon adsorber is properly maintained and desorbed according to the manufacturer's specifications, then the Diversitron Solvation® System may be equivalent to MACT for existing sources. (Existing machines that already have carbon adsorbers are not required to replace these adsorbers with refrigerated condensers under the final rule).

The information submitted by the commenter, however, does not clearly show whether or not existing Diversitron Solvation® Systems always operate with a carbon adsorber. At this time, it is uncertain whether an existing Diversitron Solvation® System installed on an existing dry cleaning machine would be equivalent to the requirements of the NESHAP. As mentioned earlier, questions remain about whether a Diversitron Solvation® system with a small integral carbon adsorber can consistently achieve high levels of emission reduction over the long term. The commenter can petition the Administrator for a determination of equivalency with the requirements of the NESHAP; however, the petitioner must provide data adequate to demonstrate that the technology is equivalent in terms of long-term emission control performance and does not have greater multi-media effects than the use of a refrigerated condenser.

2.4 MODIFICATION AND RECONSTRUCTION

Comment: One commenter (IV-D-28) noted that under the proposal if a source with a dry-to-dry machine consumes more than 220 gallons per year of PCE or a source with a transfer machine

system consumes more than 300 gallons per year of PCE, then that machine must comply with the requirements of the regulation within 90 days.

The commenter pointed out that the proposed regulation would allow the following situation: A previously uncontrolled machine that increases productivity after the regulation is promulgated would be required to install a control device within 3 months, whereas an uncontrolled machine that becomes subject to the regulation once it is promulgated, would be allowed 36 months to install a control device.

The commenter suggested that this situation could be avoided by introducing a definition for modification in section 63.321 of the proposal regulation. The commenter recommended that section 63.325(d)(2) of the proposal regulation be rewritten to read:

> Each owner or operator who commences modification such that if during any year the existing source consumes more than 830 liters per year (220 gallons per year) of perchloroethylene for a dry-to-dry machine or 1,100 liters per year (300 gallons per year) of perchloroethylene for a transfer machine after (date of publication of the final rule), then the source owner or operator shall comply with the requirements of section 63.322(a) or section 63.322(b) within X months or by the compliance date specified in section 63.322(e), whichever is later.

The commenter added that the X months should be a reasonable amount of time for the source to install controls.

Response: The EPA agrees that an inequity existed under the proposed NESHAP since a facility previously subject to the low consumption exemption would be allowed only 3 months to comply with the regulation, where other facilities were given up to 36 months. As suggested by the commenter, the standards have been revised to require that existing facilities that are not required to install control equipment initially, but may later expand their business sufficiently to become subject to the requirements, are given more time to comply with the NESHAP. The final rule requires that they achieve compliance either within 180 days of the date that they determine that they are exceeding

the consumption levels or 36 months after the date of promulgation in the Federal Register, whichever date is later. The 36-month time period for initial compliance is given to all sources to allow for the increased demand for control devices. Sources exceeding the consumption levels after the initial 36-month time period given for all sources to comply will be monitoring their PCE consumption levels and the demand for control devices will be much lower as during the initial 36-month compliance period.

Comment: One commenter (IV-D-14) noted that part of the following phrase in the proposal preamble is incorrect:

> Some changes can be made at these [dry cleaning] facilities that may be deemed reconstruction under 40 CFR 63.5. For example, replacement of either the washer or dryer would be considered a reconstruction.

The commenter estimated that a typical transfer machine washer costs $12,000 and a dryer costs $6,000, for a total transfer machine system cost of $18,000. The commenter pointed out that although it is true that replacement of a washer will exceed 50 percent of the fixed capital cost required to construct a new source, replacement of the dryer would not and, therefore, would not be considered a reconstruction. The commenter added that without this clarification, replacement of a transfer dryer alone would result in the required installation of a dry-to-dry machine.

Response: The intent of the reconstruction provision in the proposed standard was to ensure that any facility that replaces either the washer or the dryer unit in a transfer machine system would be considered a new source and would be required to comply with the applicable MACT or GACT requirements for new sources. Therefore, replacement of either the washer or dryer would be deemed reconstruction. Under the final NESHAP, no emissions are allowed for new sources between washing and drying. In effect this means that when either the washer or dryer needs to be replaced, the owner or operator must purchase a new dry-to-dry

machine. The purpose is to avoid prolonging the use of existing transfer machine systems.

Comment: One commenter (IV-D-14) recommended that the EPA make it clear that a machine below the low solvent consumption exemption level is not affected by reconstruction. The commenter argued that dry-to-dry or transfer machine systems should retain their exemption status as long as their PCE consumption levels remain below the low solvent consumption exemption level.

Response: During the regulatory development process, the EPA concluded that an exemption from installing process vent control devices for facilities with very low solvent consumption was warranted for existing sources, but that no exemption was warranted for new sources. Because the dry cleaning standard has no low solvent consumption exemption levels for new sources, a source of any size (including one below the low consumption exemption for existing sources) that undergoes reconstruction would be subject to the standards for new sources.

2.5 ECONOMIC IMPACTS

2.5.1 Public Health

Comment: Two commenters (IV-D-16, IV-D-24) expressed concern that the economic impacts discussed in the proposal omit estimates of the increased cost of health care for persons adversely affected by PCE emissions from dry cleaners. These commenters requested that the costs of adverse health affects be included in the economic analysis.

Response: The benefits of emission reduction associated with a regulation, if addressed, are discussed in a benefit analysis as part of a regulatory impact analysis performed to comply with Executive Order 12291 for major regulations. This proposal, however, is not a major regulation, and no benefit analysis was undertaken.

2.5.2 Control Costs

Comment: Two commenters (IV-L-01, IV-L-05) disagreed with the incremental cost of control for a dry-to-dry machine over a transfer machine system given in the notice of availability of new information on control of PCE emissions during clothing

transfer at dry cleaning facilities that use transfer dry cleaning machines. One commenter (IV-L-01) disagreed with the EPA's method for determining the incremental cost effectiveness of control for a dry-to-dry machine over a transfer machine system. The other commenter (IV-L-05) stated that an assessment of the health risks associated with transfer machine systems was needed to put the control costs into perspective.

Response: The approach used by the first commenter to calculate incremental cost effectiveness underestimates annual control costs because several important cost factors were excluded. The commenter excluded the amortization of capital costs, indirect operating costs (e.g., insurance costs) and solvent costs. All of these factors were included in the EPA's determination of the net annualized costs.

A NESHAP promulgated under section 112(d) of the Act is based on MACT or GACT (i.e., demonstrated emission control technology) and not on risk assessment. Nevertheless, the higher emissions from a transfer machine system were considered in examining the incremental cost effectiveness of a dry-to-dry machine over a transfer machine system.

2.5.3 Economic Considerations

Comment: One commenter (IV-L-07) stated that reconditioned dry-to-dry equipment is available at a much reduced cost and suggested the EPA use those costs in its calculations.

Response: The commenter suggested developing cost estimates for replacement of transfer machine systems with dry-to-dry machines using the cost of reconditioned rather than new dry-to-dry machines. At this time, the cost of a reconditioned dry-to-dry machine may be lower than the cost of a new machine; however, it is highly questionable whether there are a sufficient number of reconditioned machines to meet the demand created by replacing transfer machine systems. If demand increases, it is likely that the price of a reconditioned dry-to-dry machine would increase and approach the price of a new dry-to-dry machine. For this reason, it is more appropriate to base cost estimates on new rather than reconditioned dry-to-dry machines.

2.6 ENVIRONMENTAL IMPACTS

Comment: Two commenters (IV-D-01, IV-D-10) expressed concern about the wastewater impacts of the regulation. One commenter (IV-D-01) stated that although the wastewater effluent from refrigerated condenser or carbon adsorber controlled dry cleaning machines may be insignificant from a national impacts standpoint, a dry cleaning owner installing these types of controls would face expanded regulation under the Clean Water Act. The commenter pointed out that, in many jurisdictions, the allowable pretreatment limits for total toxic organic compounds (of which PCE is a normal component) is on the order of 2 ppm. The commenter added that the costs of obtaining a pretreatment permit and installing, operating, and monitoring a wastewater treatment system are not insignificant. The commenter recommended that the EPA reevaluate the implementation costs of the dry cleaning NESHAP, taking into consideration the costs of transferring PCE from air emissions to wastewater discharges.

One commenter (IV-D-10) reported that it is the current practice of some dry cleaners to use immersion heaters to evaporate process wastewater from their PCE/water separators. The commenter explained that this method can create significant fugitive PCE emissions and recommended that the practice be prohibited in the regulation.

Response: As stated in the preamble to the proposed NESHAP, and as the commenters noted, the total amount of wastewater effluent from refrigerated condenser or carbon adsorber controlled dry cleaning machines is insignificant from a national impacts standpoint. Only the use of a carbon adsorber creates a PCE contaminated wastewater stream of any significance. A typical existing dry-to-dry machine with a carbon adsorber controlled process vent generates about 0.85 kg (1.9 lb) of PCE in wastewater per year. The amount of wastewater generated by a refrigerated condenser is very small. A typical existing dry-to-dry machine with a refrigerated condenser controlled process vent generates about 0.03 kg (0.07 lb) of PCE in wastewater per year.

Under the final standard, existing dry cleaning machines with carbon adsorbers installed prior to the date of promulgation may keep their carbon adsorbers. New and uncontrolled existing dry cleaning machines, however, will be required to install refrigerated condensers. Therefore, the requirements of the promulgated rule will not result in any significant additional amount of wastewater effluent generated by dry cleaning machines. A very small amount of additional wastewater would be generated at existing major source transfer machine systems with carbon adsorbers on their room enclosures and new major source dry-to-dry machines with a smaller carbon adsorber in series with their refrigerated condenser. However, the amount of additional wastewater generated at such facilities will be very small.

As the commenter pointed out, in a few locations local sewer ordinances may prevent PCE contaminated wastewater from being routed to sewers. In situations such as these, the dry cleaning facility owner may dispose of PCE contaminated wastewater at an approved hazardous waste facility consistent with applicable State, local, and Federal regulations by evaporation or through the use of an immersion heater.

The PCE fugitives that result from using immersion heaters to evaporate PCE from separator wastewater are very small. For example, emissions from evaporating this wastewater are estimated to be 0.006 percent of the total fugitive emissions released from an average size dry cleaning machine equipped with a refrigerated condenser. Moreover, whether the small amount of separator wastewater is routed to the publicly owned treatment works (POTW) or evaporated using an immersion heater, the PCE it contains would eventually be volatilized.

Comment: One commenter (IV-D-18) requested clarification concerning cartridge filter disposal practices for the dry cleaning industry. This commenter stated that these disposal practices might be inconsistent with the disposal of used filters from other industry sources such as the oil-change industry, which is required to dispose of oil filters in an environmentally regulated manner.

This commenter questioned whether cartridge filters from the dry cleaning industry may be thrown into the trash once they have been drained or dried for 24 hours. He also questioned whether these filters are considered an F-002 waste or other similar waste under 40 CFR 261.31.

Response: As stated in the preamble to the proposal NESHAP, all PCE containing waste generated at a dry cleaning facility subject to the Resource Conservation and Recovery Act (RCRA) must be treated as a hazardous waste as specified under RCRA. Note that PCE containing waste generated at a dry cleaning facility includes spent carbon, used cartridge filters, PCE containing lint, etc.

Nothing in the regulation permits PCE containing waste generated by dry cleaners, including drained cartridge filters, to be thrown into the trash. Oftentimes, however, a dry cleaner may qualify as a conditionally exempt small quantity generator if the dry cleaner generates no more than 100 kilograms of hazardous waste per month and may be subject to less stringent requirements under RCRA.

2.7 SELECTION OF MAXIMUM ACHIEVABLE CONTROL TECHNOLOGY AND GENERALLY AVAILABLE CONTROL TECHNOLOGY

2.7.1 Regulatory Considerations

Comment: Five commenters (IV-D-10, IV-D-14, IV-D-24, IV-D-25, and IV-D-26) remarked on the use of MACT versus GACT for regulating dry cleaners. Four of these commenters (IV-D-10, IV-D-24, IV-D-25, and IV-D-26) believed that MACT should be used to regulate all dry cleaners, and one commenter (IV-D-14) believed that GACT was the appropriate method for regulation.

One commenter (IV-D-25) believed that given the high public exposure to air toxics caused by dry cleaners, regulation of all categories of dry cleaners under MACT is necessary. This commenter maintained that MACT standards offer greater protection of public health, now, and in the future, and should be adopted for all categories of dry cleaners. This commenter quoted the Congressional Record to illustrate that the regulation of certain

categories and subcategories as area sources is optional under the amended Act:

> The Administrator can also list an area source category just as he would a major source category and require installation of maximum achievable control technology.

Two commenters (IV-D-24, IV-D-26) believed that there is sufficient and compelling health effects information regarding PCE to warrant application of MACT to all dry cleaning machines regardless of type or size.

One commenter (IV-D-10) acknowledged that section 112(k) of the Act outlines a comprehensive strategy to reduce HAP's from area sources. However, this commenter believed that such a strategy would not reduce PCE emissions sufficiently from area source dry cleaning facilities. The commenter believed small existing dry cleaning facilities that have less than state-of-the-art controls will adversely impact human health and the environment. For this reason, the commenter believed that section 112(c)(3), (i.e., a threat to human health and the environment by sources individually, or in the aggregate) warrants the application of MACT controls for all area source dry cleaners.

Two commenters (IV-D-25, IV-D-26) asserted that residual risk review should be required for all dry cleaners to ensure that public health is adequately protected. One commenter (IV-D-26) argued that it is bad public policy to define the vast majority of dry cleaning facilities as area sources and apply GACT to them, thus precluding a residual risk assessment at a later date. Based on the knowledge gained in the Northeast States on public exposure to PCE from dry cleaning facilities, this commenter maintained that it is absolutely necessary that such a risk assessment be conducted for this source category.

One commenter (IV-D-14) stated that GACT instead of MACT is the appropriate control level of PCE emissions from area sources. This commenter referred to the citations from the Senate Committee Report given in the preamble and also cited additional legislative history to support his point. This commenter stated

that each of the three Senators (Senator Symms, Senator McClure, and Senator Moynihan) who spoke on the Act amendments mentioned dry cleaners as one of the groups for which GACT was appropriate.

Response: As stated in the proposal, the EPA has concluded that area source dry cleaners present a threat of adverse effects to health or the environment. For this reason, commercial dry cleaning facilities that are area sources were added to the list of source categories under section 112(c)(3) to be regulated under the Act. Listing an area source category under section 112(c)(3), however, does not require that regulations developed for this source category must be based on MACT. These regulations may be based on MACT or they may be based on GACT.

The EPA does not agree with the commenters who believe the health effects information regarding PCE is so compelling that it warrants application of MACT to all small area source dry cleaners. As stated by the Science Advisory Board, "[t]he available scientific evidence confirms that perchloroethylene should be considered as an animal carcinogen . . . [however] we do not consider the evidence strong enough to classify this compound as a probable human carcinogen . . . ."

During development of the regulation, the EPA concluded that many small area source dry cleaning facilities may experience adverse economic impacts as a result of imposing a regulation based on MACT. For this reason, the GACT approach was selected as the basis for regulating small area source dry cleaning facilities.

Although a residual risk analysis is required for sources regulated under MACT, those sources regulated under GACT may also receive a residual risk analysis. Section 112(f)(5) of the Act merely states that residual risk analysis is not required for area sources regulated with GACT; it does not preclude area sources from a residual risk analysis.

In addition, as mentioned by one of the commenters, section 112(k) of the Act directs the EPA to develop a strategy to control HAP emissions from area sources in urban areas. The strategy, among other things, must achieve area source emissions

reductions from the 30 HAP's that pose the greatest threat to public health and achieve at least a 75 percent reduction in cancer incidence from all stationary sources. Consequently, the need for emission controls beyond GACT at dry cleaners will be reconsidered in the context of the overall urban air strategy and the relative contribution of PCE emissions from dry cleaning facilities to urban exposures.

Finally, as pointed out by one commenter, much evidence exists in the Senate Committee report and the legislative history of the 1990 Clean Air Act amendments, that dry cleaning was considered an example of an area source category for which regulations based on GACT were appropriate.

Comment: One commenter (IV-D-24) disagreed with the conclusion given in the proposal preamble that, for economic reasons, it is unreasonable to apply MACT to all sources. The commenter stressed that existing State requirements have been successfully implemented on the dry cleaners that the EPA proposes to exempt. The commenter added that the reduction in solvent usage (in some cases, a 50 percent reduction has been reported) and associated savings have a net pay back period of 2 to 3 years.

Response: The economic analysis conducted prior to proposal serves as the basis for the conclusion that it is unreasonable to impose MACT on area source dry cleaners. Unlike the MACT approach for major sources, which specifies a regulatory floor (i.e., minimum regulatory requirements), the GACT approach for regulating area sources specifies no regulatory floor. Development of any GACT requirement, therefore, takes into consideration the costs and economic impacts as well as other potential impacts associated with its requirements. For this reason, GACT for area sources represents a balance between economic, energy, and environmental impacts. This consideration is particularly important when regulating area source dry cleaners because the majority of these facilities are small, family-owned businesses that could be severely impacted by regulatory requirements.

Data on impacts associated with the implementation of current State requirements are not available; however, as discussed in the proposal preamble, analysis of the impacts associated with implementation of the standards with no low solvent consumption exemption levels estimates a potential 20 percent closure rate for small dry cleaning facilities. Impacts of this magnitude are considered unreasonable.

Analysis of the solvent savings associated with controlling emissions from the small machines exempted by the low solvent consumption exemption level show that solvent savings do not offset the cost of purchasing and operating the control equipment as contended by the commenter.

Comment: Four commenters (IV-D-10, IV-D-24, IV-D-25, IV-D-26) believed that Regulatory Alternative III, the most stringent regulatory alternative given in the proposal NESHAP for controlling process vents, should be selected to control emissions from all existing and new dry-to-dry machines and transfer machine systems.

Response: At proposal, Regulatory Alternative II, which was based on refrigerated condenser control of process vent emissions from existing area source transfer machine systems and carbon adsorber control of process vent emissions from new area source transfer machine systems, was selected as the basis for the area source standards. Regulatory Alternative III, which the commenters refer to, was based on carbon adsorber control of process vent emissions from new and existing area source transfer machine systems. Regulatory Alternative I was based on refrigerated condenser control of process vent emissions from new and existing area source transfer machine systems.

At proposal, the EPA believed carbon adsorbers outperformed refrigerated condensers on transfer machine systems and proposed to require carbon adsorbers on uncontrolled transfer machine systems. Following proposal, however, new information became available from a survey of approximately 2,000 dry cleaning facilities conducted by CARB. This information reveals that the solvent mileage achieved in actual practice by a refrigerated

condenser is much greater than that achieved by a carbon adsorber. Although air emissions are only one of several factors that determine solvent mileage, significantly better solvent mileage is indicative of lower air emissions. The new information leads the EPA to conclude that refrigerated condensers achieve significantly lower air emissions in actual practice than carbon adsorbers.

The final NESHAP, therefore, requires existing uncontrolled transfer machine systems at area sources to install and operate refrigerated condensers. The Administrator considers the additional costs of replacing existing carbon adsorbers with refrigerated condensers, however, to be unreasonable. As a result, existing transfer machine systems already controlled by carbon adsorbers are not required to replace their carbon adsorbers with refrigerated condensers.

Comment: One commenter (IV-D-24) stated that the proposal NESHAP does not consider using the authority of section 112(a)(1) of the amended Act to consider dry cleaners that emit less than 10 tpy to be major sources based on the potency of the HAP, persistence, potential for bioaccumulation, or "other characteristics of the air pollutant, or other relevant factors." This commenter realized that the EPA has not established guidelines yet for determining lesser quantity emission rates (LQER's). However, this commenter believed that PCE satisfied the criteria for establishing a LQER, particularly with regard to the inherent toxicity of PCE, its high potential for bioaccumulation, and the extensive public exposure to PCE that has been documented in the vicinity of dry cleaning facilities. The commenter cited these factors to support applying MACT to all sizes of dry cleaning machines.

Response: Section 112(a)(1) of the Act is a discretionary provision. The EPA has the authority to develop LQER's for some hazardous air pollutants "on the basis of the potency of the air pollutant, persistence, potential for bioaccumulation, other characteristics of the pollutant, or other relevant factors." The methodology for evaluating the need for and the approach for

establishing LQER's is still under development. If an LQER ultimately is adopted for PCE, then the dry cleaning NESHAP will be reviewed and revised, as appropriate.

2.7.2 Determining Threshold of Threat of Adverse Effects

Comment: One commenter (IV-D-24) responded to the EPA's request for comments on the appropriate threshold for determining whether a particular source category or subcategory presents a threat of adverse effects to health or the environment sufficient to warrant regulation. This commenter argued that although the EPA stated that this finding is required in the absence of an area source strategy, the following direction exists (according to the commenter) in the amended Act:

> This study was not intended to replace or diminish regulation of area sources, particularly in the case of dry cleaners

and

> provides that the requirements to develop area source strategy shall not be interpreted to preclude or delay implementation of action with respect to area sources of HAP's under consideration pursuant to the Clean Air Act that may be promulgated before the strategy is proposed.

Based on this citation, this commenter stressed that Congress did not intend for the urban area source strategy to be the sole vehicle for regulating area sources. This commenter further stated that economic impact analysis alone or national impacts of emissions reductions do not permit the appropriate evaluation of whether an area source presents an adverse threat to human health or the environment. This commenter argued that in determining the health impacts of area sources, the inherent toxicity of the HAP and the exposure potential of the population living in the vicinity of the source must be considered. This commenter concluded by saying that exposure conditions must include a characterization of the fate and transport of the HAP once it is released from the source and activity patterns of the exposed population.

Response: The EPA agrees with the commenter that the urban area source strategy was not intended to be the sole vehicle for regulating area sources. The EPA is proposing to regulate PCE dry cleaners, most of which are area sources, prior to the completion of the urban area source strategy.

In order to regulate a category of area sources under section 112(d), a finding must be made that the category presents a threat of adverse effects to human health or the environment sufficient to warrant regulation. Therefore, a finding of a threat of adverse effects was presented in the proposed rule for PCE dry cleaners.

The fate and transport of PCE emissions were not specifically addressed in this finding. However, the EPA believes that available health effects information is sufficient to establish a finding of a threat of adverse effects for the purpose of regulation under section 112(d). Furthermore, the EPA believes standards under section 112(d) are the appropriate first step and that further controls (considering fate and transport) may be appropriate after completion of the national area source strategy required by section 112(l) of the Act.

2.7.3 Indoor Air Pollution

Comment: Twelve commenters (IV-D-05, IV-D-08, IV-D-10, IV-D-11, IV-D-14, IV-D-16, IV-D-17, IV-D-21, IV-D-23, IV-D-24, IV-D-25, IV-D-26) had remarks on indoor air pollution. Ten commenters (IV-D-05, IV-D-08, IV-D-10, IV-D-11, IV-D-16, IV-D-17, IV-D-23, IV-D-24, IV-D-25, IV-D-26) expressed concern about indoor air pollution from neighborhood dry cleaners and thought that the standards did not adequately address this problem. Five commenters (IV-D-10, IV-D-11, IV-D-16, IV-D-24, IV-D-25) referred to a New York State study which found high levels of PCE in residences located above dry cleaning establishments. These commenters urged the EPA to review this study. The commenters believed this study clearly indicates that the risk to public health in such situations is significant and should be targeted for regulation.

One commenter (IV-D-05) stated that the proposed NESHAP does not reduce this indoor air pollution problem and requested that the standards be modified to prevent these problems from occurring. Another commenter (IV-D-11) mentioned that although the Act does not specifically address indoor air pollution, indoor air emissions eventually become ambient air emissions.

One commenter (IV-D-14) disagreed with the concern that the standards would not adequately control air pollution by stating that the purpose of the Act is to address ambient air quality rather than indoor air quality.

Response: The EPA was unaware of the New York study and its findings of elevated PCE levels in residences located above dry cleaning facilities prior to proposal. Many States and environmental groups, however, referred to this study in their public comments on the proposed NESHAP, and several commenters submitted copies of the report attached to their public comments. Subsequent discussions with the authors of the report indicate that the dry cleaning trade associations are familiar with it. Nevertheless, copies of the report were forwarded to these associations to ensure they were aware of it. As a result, the EPA believes that most people concerned with PCE emissions from dry cleaning facilities are familiar with the study and, as such, the study can be considered common knowledge.

The New York study indicates that PCE emissions can accumulate in residences located above dry cleaning facilities, leading to increased public exposure to PCE. It should be noted that PCE accumulation in buildings would not be limited to residences located above dry cleaning facilities. In fact, the New York study can be viewed as demonstrating that PCE emissions can accumulate in any building that includes a dry cleaning facility.

While not definitive, in EPA's opinion, several observations included in the New York study suggest that fugitive PCE emissions--not process vent emissions--may be the major contributor to the elevated PCE levels in the apartments located above the dry cleaning facilities. For example, process vent

emissions were generally released to the atmosphere at a point outside the dry cleaning facility, yet the elevated PCE levels observed in the apartments were essentially the same whether the windows of the apartments were open or closed during the study. This tends to discount the contribution of process vent emissions to the elevated PCE levels.

On the other hand, observed PCE levels in the apartments located above dry cleaning facilities with transfer machine systems were significantly higher than PCE levels observed in apartments above dry cleaning facilities with dry-to-dry machines. This tends to highlight the contribution of fugitive emissions to the elevated PCE levels, since fugitive emissions from transfer machines systems are much higher than those from dry-to-dry machines due to clothing transfer between the washer and the dryer at transfer machine systems. Also, equipment leaks and generally poor operation were observed at many of the dry cleaning facilities, and these are major contributors to fugitive emissions.

As a result, EPA reevaluated the costs and benefits of extending those provisions of the proposed standards which focused on fugitive emission control (i.e., the pollution prevention requirements) to dry cleaning facilities below the low solvent consumption exemption levels. Such pollution prevention requirements include leak detection and repair, and good housekeeping practices such as keeping solvent tanks and containers covered while not in use, and minimizing the time that the doors on the dry cleaning machines remain open. These costs were determined to be reasonable based on the additional emission reduction achieved. Thus, in the final rule, all PCE dry cleaning facilities are required to implement pollution prevention practices. Such practices would help address the indoor air problems indicated by the New York study.

Additional remedies to control indoor air emissions from PCE dry cleaning facilities may also be necessary and appropriate. Such remedies could be adopted on the Federal, State, or local level. At this time, however, the EPA is unsure of what these

additional remedies might be. Consequently, the EPA will continue to assess the problem highlighted by the New York study, try to identify additional remedies, and decide how best to proceed.

2.7.4 Small Consumption Facilities

Comment: Six commenters (IV-D-10, IV-D-11, IV-D-16, IV-D-17, IV-D-23, IV-D-25) believed that the proposed low solvent consumption exemption levels would exempt existing area source dry cleaning operations that endanger human health. One of these commenters (IV-D-11) stated that it is the small volume area source facility that poses the largest threat to individuals because many existing area source dry cleaners are located in residential areas. Another commenter (IV-D-25) argued that, because of their location in proximity to human populations, more people are exposed to air toxics from small existing area source dry cleaners than from large industrial complexes, such as chemical plants, which are not usually located in the midst of population centers. Another commenter (IV-D-16) believed that virtually all small existing area source dry cleaners contributing to this problem would be sources exempted under the proposed NESHAP.

Three commenters (IV-D-10, IV-D-11, IV-D-23) requested that the EPA reevaluate the low solvent consumption exemption levels to ensure that small existing area source dry cleaning facilities located in or near residences are subject to the standards.

One commenter (IV-D-17) recognized that although the economic impact of regulating the small existing area source dry cleaners can be significant, the process and fugitive emissions from these sources can endanger human health. This commenter requested that, prior to promulgating the NESHAP, the EPA examine low cost control technology and operating procedure alternatives to reduce PCE emissions from small existing area source dry cleaners.

Two commenters (IV-D-14, IV-D-22) recommended that small existing area source dry cleaning machines exempted from the

regulation not be exempted from certain inspection and repair provisions.

Response: The Act provides the Administrator with a considerable amount of flexibility in regulating small area sources. For the small area source dry cleaning category, GACT was selected as the vehicle for regulation consistent with the Senate Committee report on the Act, which cited dry cleaning as an example of a source for which GACT was the most appropriate vehicle for regulation.

Standards developed under GACT represent the Administrator's judgment of a reasonable balance between the cost, energy, and environmental impacts of alternative control technologies. The objective of GACT is to achieve the greatest degree of emission reduction without imposing unreasonable impacts. Because very small dry cleaners may suffer economic hardship if stringent regulation is imposed on them, the cost, economic and other impacts on these sources were carefully evaluated.

There are no low solvent consumption exemption levels included in the NESHAP for new area sources. The final NESHAP requires all new area source dry cleaning machines to control process vents, clothing transfer emissions, and fugitive emissions.

All existing area source dry cleaning machines are required to control fugitive emissions. Existing area sources are also required to control process vents except where the economic, energy, and environmental impacts were judged to be unreasonable. At proposal these impacts were judged to be unreasonable for area sources consuming less than 200 and 300 gallons of PCE per year for dry-to-dry machines and transfer machine systems, respectively (corresponding to annual receipts of $100,000).

In response to comments, the EPA reconsidered the low solvent consumption exemption levels for process vent control and decided to lower them to 140 and 200 gallons per year, respectively. The cost effectiveness of process vent control at these very small area sources ranges from $1,600 to $3,600 per ton of PCE. As many as 165 additional financial failures are

estimated to result from lowering the low solvent consumption levels for process vent control. Also, there could be as many as 65 additional business closures. Based on the concern expressed in comments about PCE emissions from these small area sources, the EPA judged these increased impacts to be reasonable for area sources with dry-to-dry machines consuming 140 gallons or more and area sources with transfer machine systems consuming 200 gallons or more of PCE (corresponding to annual receipts of $75,000). The EPA considered it unreasonable, however, to lower the low solvent consumption levels for process vent control further due to the high costs and excessive financial failures and closures (up to 3,800 financial failures and 1,400 closures) that would result.

As mentioned earlier, the EPA reevaluated the impacts of extending pollution prevention requirements to all dry cleaning facilities and concluded these impacts to be reasonable. Thus, in the final standards, all facilities are required to implement pollution prevention practices.

Additional remedies to control fugitive emissions especially at those dry cleaning facilities located in multi-use buildings may also be appropriate. At this time, however, the EPA is unsure of what these additional remedies might be. Consequently, the EPA will continue to assess the problem highlighted by the New York study, try to identify additional remedies, and decide how best to proceed. Assessment of the problem may lead to an additional rulemaking or might lead to guidance on remedies for States to implement.

2.7.5 Banning of Transfer Machine Systems

Comment: Two commenters (IV-D-20, IV-D-23) recommended that the EPA impose a ban on the sale of new or used transfer machine systems in the future. One commenter (IV-D-20) disagreed with the statement in the preamble that "no new transfer machines have been sold in recent years, and this trend is expected to continue." This commenter stated that transfer machine systems are still being offered and sold to dry cleaners.

This commenter believed that a ban on the sale of transfer machine systems would prevent dry cleaners from purchasing machines that may not allow them to meet the new OSHA PEL of 25 ppm that goes into effect (without the use of protective equipment) in December 1992. The commenter pointed out that a ban on the sale of transfer units would also allow dry cleaners to comply with local air district regulations that are or may be more stringent than the proposed standards.

This commenter stated that it is cost effective to purchase closed loop dry-to-dry machines, pointing out that a reconditioned machine can be purchased for between $18,000 and $22,000. The commenter noted that low interest loans (7 percent) are available for dry cleaners in some areas, such as California. This commenter stated that a typical PCE usage rate for a transfer machine system is 1,200 gallons per year compared with about 120 gallons per year for a dry-to-dry closed loop machine. This commenter pointed out that, at a price for PCE of $4.35 per gallon, the savings in switching from a transfer to a dry-to-dry closed loop machine would be about $4,700 annually. The commenter added that the $20,000 investment would be paid off in about 5 years. This commenter believed that dry cleaners are not always aware of current or pending regulations, and they are heavily influenced by what vendors tell them. This commenter thought that banning transfer dry cleaning machine systems would reduce worker exposure to PCE, reduce PCE releases, and ensure a better capital investment for the dry cleaner.

Two commenters (IV-D-14 and IV-L-03) urged the EPA to tighten the standards for new or reconstructed major sources and area sources above the low solvent consumption exemption levels. These commenters suggested that, for these facilities, it is appropriate to require the purchase of dry-to-dry refrigerated equipment instead of allowing the use of conventional vented dry-to-dry machines or transfer machine systems with carbon adsorbers.

These commenters noted that although this refrigerated equipment represents a greater capital investment, a new entrant

to the dry cleaning market would incorporate this additional expense into the cost of doing business when deciding whether or not to enter the market. They explained that a facility contemplating the replacement of its dry cleaning machine would make a similar evaluation. They also stated that, in both cases, a significant reduction in PCE consumption would offset the additional capital expense over the long term. However, one commenter (IV-L-03) believed that an exception should be made for those facilities that installed a transfer machine system between proposal and promulgation.

Another commenter (IV-L-07) wanted the EPA to ban the sale of both new and used transfer machine systems, adding that both new and used transfer machine systems are still being offered for sale and will continue to be sold unless their sale is no longer allowed.

Response: Prior to proposal, the EPA believed that no new transfer machine systems were being sold or had been sold in recent years due to the adoption of the Occupational Safety and Health Administration (OSHA) permissible exposure level (PEL) of 25 parts per million (ppm) for PCE (January 19, 1989), which was intended to reduce worker exposure levels. Based on the level of PCE emitted during the transfer step, transfer machine systems were viewed as incapable of meeting this OSHA PEL. Because the EPA believed no new transfer machine systems were being sold, it was not considered necessary to develop regulations that effectively banned or prohibited the use of new transfer machine systems.

Following proposal, however, the Eleventh Circuit Appeals Court remanded the PEL to OSHA. This action could certainly slow the transition from transfer machine systems to dry-to-dry machines.

It was also learned following proposal that many owners or operators of transfer machine systems were meeting the OSHA PEL by increasing ventilation or rotating the placement of their workers. Moreover, it was learned that petroleum transfer machine systems, which are still being manufactured for use with

petroleum solvents, could be used as PCE transfer machine systems.

Finally, it was learned that, in some cases, reclaimers were being used with dry-to-dry machines to increase clothing throughput of the machines. A reclaimer is essentially a dryer and its use with a dry-to-dry machine effectively converts the dry-to-dry machine to a washer, thus creating a new transfer machine system. The EPA, therefore, has reconsidered its position at proposal, which was that a ban or prohibition of new transfer machine systems is unnecessary.

For transfer machine systems located at a major source, the NESHAP must be based on MACT. The Act states that MACT for new sources must be no less stringent than the best controlled similar source. A new transfer machine system with a room enclosure represents the best controlled similar source. However, MACT may be more stringent if the Administrator believes the balance between the additional economic, energy, and environmental impacts of a more stringent requirement is reasonable. Dry-to-dry machines provide greater control of clothing transfer emissions than transfer machine systems--even those with room enclosures--because they eliminate these emissions (achieving 100 percent reduction of clothing transfer emissions). A new dry-to-dry machine rather than a new transfer machine system with a room enclosure, therefore, would achieve greater reductions in PCE emissions. The MACT for new transfer machine systems could be based on the use of new dry-to-dry machines, thereby requiring new major source transfer machine systems to eliminate all emissions from clothing transfer. Such a requirement would effectively ban or prohibit new transfer machine systems because no technology has been identified to date that could be added to a new transfer machine system to eliminate all PCE emissions from clothing transfer.

The benefits associated with a requirement based on new dry-to-dry machines would be 100 percent control of clothing transfer emissions. Clothing transfer is estimated to contribute approximately 25 percent of the PCE emissions from an

uncontrolled transfer machine system. The annualized costs for such control would be a net savings ($300) because overall PCE consumption is lower with a dry-to-dry machine. This lower cost is due to the increased amount of PCE that is recovered and recycled within the machine.

The EPA believes it is reasonable to require new transfer machine systems located at major sources to meet the same level of emission control achieved by new dry-to-dry machines. Thus, the final NESHAP prohibits any emissions between the washing and drying step of the dry cleaning cycle for new transfer machine systems located at major sources.

For new area source transfer machine systems, the NESHAP is based on GACT. The GACT is a balance between environmental, economic, and energy impacts the Administrator considers reasonable. The incremental cost effectiveness of requiring a new dry-to-dry machine over a new transfer machine system at a typical new area source is approximately $2,600 per ton. The EPA does not believe that the additional costs of purchasing a new dry-to-dry machine over purchasing a new transfer machine system would deter entry (or expansion) into the dry cleaning market. If a new business venture is viable and attractive with a new transfer machine system, the EPA believes that the business venture would be equally viable and attractive with a new dry-to-dry machine. Consequently, the impacts of requiring transfer machine systems to eliminate all clothing transfer emissions (i.e., purchase a new dry-to-dry machine) is considered reasonable.

Comment: One commenter (IV-D-25) stated that at one point during the regulatory development process, the EPA was considering immediate or gradual replacement of existing transfer machine systems with new dry-to-dry machines. This commenter noted that there was no mention of existing transfer machine system phaseout in the proposed NESHAP. The commenter stressed that the EPA cannot rely on OSHA rules to accomplish a prompt phaseout of existing transfer machine systems. The commenter noted that OSHA's final rule contemplated an extension of the

deadline by which engineering controls would be required, if a trade association requests it.

This commenter believed that the NESHAP should provide a schedule for the accelerated replacement of existing transfer machine systems with well-controlled dry-to-dry machines, and not simply rely on trends in the industry.

Two commenters (IV-L-05, and IV-L-06) believed that all existing transfer machine systems should be phased out of use. One commenter (IV-L-05) felt they should be phased out rapidly. One commenter (IV-L-06) also recommended phasing out existing transfer machine systems and believed that MACT for all existing transfer machine systems is replacement with dry-to-dry machines.

Response: The requirement for existing transfer machine systems to be replaced with new dry-to-dry machines was a control option considered by the EPA prior to proposal of the NESHAP. From a cost-effectiveness viewpoint, there is little difference in the impacts of requiring immediate replacement of existing transfer machine systems or gradual, phased-in replacement. In both cases, the capital cost of the existing transfer machine system is a "sunk" cost that has been incurred and is not a factor in the analysis.

This viewpoint makes the analysis of replacing or phasing out existing transfer machine systems quite different from that of banning or prohibiting new transfer machine systems. For existing transfer machine systems, the costs of replacing or phasing out the existing system are the full costs of a new dry-to-dry machine. For a new transfer machine system, the costs of banning or prohibiting the new system is the difference in costs between the new transfer machine system and the new dry-to-dry machine. Consequently, the costs are much higher in the analysis of replacing or phasing out existing transfer machine systems than they are in the analysis of banning or prohibiting new transfer machine systems. The incremental cost effectiveness for replacing or phasing out a typical area source existing transfer machine system with a dry-to-dry machine is approximately $41,800 per ton of PCE reduced. The incremental

cost effectiveness for replacing or phasing out a typical major source existing transfer machine system with a dry-to-dry machine is approximately $12,200 per ton of PCE reduced.

The high costs of either immediate or gradual replacement of existing transfer machine systems is considered unreasonable for both area and major sources. No additional information has been presented to alter this conclusion. Consequently, the NESHAP does not require replacement of existing transfer machine systems with dry-to-dry machines.

2.7.6 Reclaimers

Comment: Five commenters (IV-L-02, IV-L-03, IV-L-05, IV-L-06, IV-L-07) agreed with EPA that use of a reclaimer with a dry-to-dry machine would make them a transfer machine system. One commenter (IV-L-07) also wanted to ban the sale of new or used reclaimers.

Response: The NESHAP has been revised to define a dry-to-dry machine used with a reclaimer as a transfer machine system. The NESHAP does not allow emissions to occur between the wash and dry cycles for a new dry cleaning machine. This requirement effectively bans or prohibits new transfer machine systems. It also effectively bans or prohibits the use of new reclaimers with new or existing dry-to-dry machines, because adding a reclaimer to a new or existing dry-to-dry machine creates a new transfer machine system.

2.7.7 Room Enclosures

Comment: One commenter (IV-D-25) suggested that, until transfer machine systems are phased out, total vapor containment (i.e., room enclosures) should be the control required for all transfer machine systems. The commenter requested that transfer machine systems be enclosed to capture fugitive emissions and channel them to control devices.

Two commenters (IV-D-10 and IV-D-24) suggested that the EPA evaluate a new type of total vapor containment exhaust and control system (i.e., room enclosure) that has been retrofitted to an existing transfer machine in New York State. The commenter

stated that this control system should be considered MACT for transfer machine systems.

Response: As indicated in the previous response, the final NESHAP effectively bans new transfer machine systems. At the commenters' suggestion, the EPA reconsidered requiring room enclosures on existing transfer machine systems. Room enclosures capture and vent the fugitive PCE emissions to a carbon adsorber. Because clothing transfer emissions are a significant portion of overall transfer machine system emissions, control of these through a room enclosure would achieve additional emission reductions.

The only type of control device that could effectively control PCE emissions on a room enclosure is a carbon adsorber. As stated previously, however, new information emerged following proposal indicating that in actual practice within the dry cleaning industry, carbon adsorbers achieve a much lower level of emission reduction than originally thought.

Assuming, for the sake of discussion, a carbon adsorber achieves a 95 percent reduction in PCE emissions, the incremental cost effectiveness of requiring room enclosures with carbon adsorbers on existing major source transfer machine systems would be as low as $300 per ton of PCE. In fact, even if the control efficiency of the carbon adsorber was as low as 10 percent, the incremental cost effectiveness of requiring room enclosures on major source transfer machine systems would be about $3,600 per ton.

Although the EPA does not believe the control efficiency of carbon adsorbers within the dry cleaning industry is as low as 10 percent, making such an assumption for the purpose of calculations effectively indicates that, even at low control efficiencies, the use of room enclosures at major source transfer machine systems is reasonable. Consequently, the final NESHAP requires the use of room enclosures with carbon adsorbers at existing major source transfer machine systems.

Requiring existing major source transfer machine system dry cleaners to use room enclosures is not estimated to result in any

additional financial failures or closures. Initially, due to the limited number of vendors of room enclosures, the EPA was concerned with the creation of a market for these devices. With few vendors and a large demand, the price of room enclosures could rise significantly. However, if required only for the approximately 250 existing major source transfer machine systems, the demand for room enclosures is not judged sufficient to cause a significant rise in the price of a room enclosure.

For existing area sources, the impacts of requiring a room enclosure are considered unreasonable. The incremental cost effectiveness of requiring a room enclosure for a typical area source could be as high as $8,900 per ton of PCE, even if the carbon adsorber is achieving a high percent emission reduction efficiency (e.g., 95 percent). As discussed above, if the carbon adsorber is operating at a lower control efficiency, the resulting incremental cost effectiveness would be even higher.

The number of additional financial failures could be as high as 1,100 with as many as 260 additional closures if room enclosures were required on all existing area source transfer machine systems. Up to 500 additional financial failures and as many as 5 additional closures would result, even from such a requirement on only the largest area sources, those with annual receipts over $100,000. In addition, with only a few vendors of room enclosures, the EPA remains concerned with the impact that extending a requirement for room enclosures to all existing transfer machine system area source would have on the price of room enclosures. For these reasons, the Administrator considers room enclosures unreasonable for existing transfer machine system area sources.

2.7.8 Hamper and Room Enclosures

Comment: One commenter (IV-L-02) stated that hamper enclosures and room enclosures should be required on transfer machine systems. This commenter (IV-L-02) stated that transfer machine systems are archaic and have a high PCE pollution potential and believed that if a transfer machine system is installed then the hamper enclosure should be used in conjunction

with the room enclosure during the transfer step and an exhaust ventilation rate (such as 100 linear feet per minute inward air velocity) should also be required.

Response: The use of both a hamper enclosure and a room enclosure together is not estimated to reduce PCE emissions from the clothing transfer step by any more than a room enclosure alone. Little additional PCE reduction is estimated because the hamper enclosure would be located inside the room enclosure.

Comment: One commenter (IV-L-05) believed that the use of hamper and room enclosures should not be limited to new machines because loans and leasing arrangements are made available by major equipment manufacturers for small businesses.

Response: The availability of loans or leasing arrangements was not an issue in determining the reasonableness of requiring hamper or room enclosures. Rather, the concern was the price of such control devices in a monopolistic market created by regulation when there is only one supplier (with a patent) of the devices. This situation could cause the price of such control devices to increase significantly if the widespread use of these controls were mandated by the NESHAP.

Comment: One commenter (IV-L-03) believed that transfer enclosures (e.g., hamper and room enclosures) would not be economically feasible for existing area sources. This commenter added that with a great demand for hamper enclosures, their price could increase substantially above the current price of $3,000. The commenter added that the same would occur with room enclosures, as they would also likely be sold in a monopolistic market. Two commenters (IV-L-02, IV-L-05), however, stated that economic concerns about the creation of a monopolistic market were overstated.

Response: Initial concerns about the emission reduction achievable, costs, and availability of hamper enclosures and room enclosures made them unreasonable for area source dry cleaning machines. In response to the comments, however, the EPA reconsidered requiring room enclosures on existing major sources. As discussed elsewhere, the final NESHAP requires room enclosures

on existing major source transfer machine systems--those located in a dry cleaning facility with an annual PCE consumption of more than 1,800 gallons). By limiting this requirement to major sources, the demand for room enclosures is relatively small and is unlikely to lead to excessive price increases.

Although two commenters believed the economic concerns associated with requiring hamper enclosures or room enclosures may be overstated, these commenters offer no reasoning or logic to explain why they believe that to be the case.

2.7.9 Additional Controls for Dry-to-Dry Machines

Comment: Two commenters (IV-D-25, IV-D-27) stated that additional controls should have been considered for dry-to-dry machines. One commenter (IV-D-25) mentioned a new German machine, the Permac Consorba®, that uses a carbon adsorber in conjunction with a refrigerated condenser for vent control. The commenter pointed out that this machine was mentioned in the background document as achieving 98 to 99 percent control, but was not evaluated further. The commenter stated that it made sense that a dual control system would achieve better control than a machine with one control device. The commenter felt that this control was not evaluated sufficiently and quoted the Congressional Record:

> In implementing this provision, the managers intend the Administrator to take whatever steps are necessary to assure that he has collected data on all of the better-performing sources within each category. He must have a data-gathering program sufficient to assure that he does not miss any sources that have superior levels of emission control.

Another commenter (IV-D-27) stated that emissions to the atmosphere from dry-to-dry machines with refrigerated condensers are limited to the opening and closing of the loading door. This commenter pointed out that some States, such as New Jersey, determined that emissions from dry-to-dry refrigerated condenser controlled machines would exceed the levels prescribed in their rule. These machines have installed mini-carbon adsorbers to reduce PCE emissions for a capital cost of about $3,000. The

commenter suggested that the EPA should evaluate the use of such devices and consider requiring them.

One commenter (IV-D-25) discussed the "floor" as described in section 112(d)(3) of the amended Act:

> Emission standards...shall not be less stringent, and may be more stringent than the average emission limitation achieved by the best performing 12 percent of the existing sources...(emphasis added by commenter)

The commenter quoted an explanation by the author of this section, which appeared in the Congressional Record:

> Subsection(d) specifically authorizes the Administrator to go beyond the floor if he determines that a more stringent standard is achievable. Indeed, the Administrator is authorized and expected to set the standard beyond the level achieved by any source in the past if he determines that such a standard will be achievable by the deadline for compliance. The fundamental test is not whether the standard is at or above the average for the best performing 12 percent of the sources in the category, but whether the standard reflects the maximum degree in reduction of emissions that can be achieved by sources in the category.

This commenter argued that MACT for existing dry-to-dry machines should consider the use of supplemental control systems, such as carbon adsorber add-ons to a refrigerated condenser machine. The commenter stated that this approach should be evaluated to determine if it can achieve better levels of control for existing sources.

Response: In the simplest sense, a Permac Consorba® may be described as a dry-to-dry machine equipped with two control devices in series--a refrigerated condenser followed by a carbon adsorber. The reported advantage of this system over a conventional dry-to-dry machine equipped with only a refrigerated condenser is that the Permac Consorba® reduces the PCE concentration in the air remaining in the machine once the dry cleaning cycle is complete.

With a conventional dry-to-dry machine equipped with a refrigerated condenser, the air is saturated with PCE at the end of the dry cleaning cycle. With the Permac Consorba®, because

the air is drawn through a carbon adsorber during the final stages of the dry cleaning cycle, the concentration of PCE in the air in the machine is lower than the saturation concentration.

The Permac Consorba® is also a "no-vent" dry-to-dry machine. In other words, when the door is opened at the conclusion of the dry cleaning cycle, no fan turns on to draw room air through the dry cleaning machine and "vent" the machine to the atmosphere. Conventional dry-to-dry machines equipped with refrigerated condensers, on the other hand, may be vented or no-vent.

At the end of the drying cycle, a fan turns on when the door to a vented dry-to-dry machine is opened. This fan draws room air into the machine and discharges it to the atmosphere through a vent. Consequently, at the end of the drying cycle, a vented dry-to-dry machine equipped with a refrigerated condenser releases all the PCE vapors contained in the machine directly to the atmosphere.

No fan turns on at the end of the drying cycle to "vent" PCE vapors remaining in the machine when the door to a no-vent dry-to-dry machine is opened. However, in the process of unloading articles from the machine and loading more articles to be cleaned into the machine, most of the PCE vapors remaining in the machine escape into the room and then into the atmosphere. As a result, there is essentially no difference in PCE emissions between vented and no-vent dry-to-dry machines equipped with a refrigerated condenser.

Since the air remaining in the Permac Consorba® is drawn through a carbon adsorber before the door to the machine is opened, the Permac Consorba® has slightly lower PCE emissions than a conventional dry-to-dry machine equipped with a refrigerated condenser (vented or no-vent). Over the course of a year, a typical 35-pound dry-to-dry machine with a refrigerated condenser will emit approximately 100 pounds per year of PCE due to release of the PCE emissions remaining in the air in the machine at the conclusion of the dry cleaning cycle when the door is opened.

These emissions can be controlled by drawing the air remaining in the machine through a small carbon adsorber either before the door to the machine is opened (similar to the Permac Consorba®) or venting the air through a carbon adsorber when the door is opened. Indeed, several vented dry-to-dry machines equipped with refrigerated condensers currently operate in this manner (i.e., the air remaining in the machine is vented to a carbon adsorber). There is no difference in PCE emissions between a Permac Consorba® and a vented dry-to-dry machine equipped with a refrigerated condenser and a small carbon adsorber on the vent. Similarly, there would be no difference in emissions between a Permac Consorba® and a conventional no-vent dry-to-dry machine equipped with a refrigerated condenser that passed the air remaining in the machine at the end of the dry cleaning cycle through a carbon adsorber before the door to the machine was opened.

Under the Act, MACT for new major sources must be no less stringent than the best-controlled similar source. As a result, the final NESHAP requires that new major source dry-to-dry machines be equipped with a refrigerated condenser and that the air remaining in the machine at the end of the dry cleaning cycle be passed through a carbon adsorber prior to opening the machine door or that the air remaining in the machine be passed through a carbon absorber as soon as the door to the machine is opened. Thus, the level of control required for major new source dry cleaning facilities is equivalent to that achieved by the Permac Consorba® technology.

The MACT is also required for existing dry-to-dry machines located at major sources. Under the Act, MACT for existing sources must be no less stringent than the level of control achieved by the best 12 percent of existing sources. Less than 12 percent of existing major source dry-to-dry machines are using a refrigerated condenser in combination with a carbon adsorber to control PCE process vent emissions. However, MACT can be more stringent if the Administrator determines that the balance of

costs, energy, and environmental impacts of choosing a more stringent level of control are reasonable.

Assuming, for the sake of discussion, a 95-percent emission reduction for a carbon adsorber, the incremental cost effectiveness of the additional emission reduction achieved by requiring conventional dry-to-dry machines with a refrigerated condenser to also install a carbon adsorber would be in the range of approximately $7,000 per ton of PCE for a typical existing major source dry-to-dry machine located at a major source. If the efficiency of the carbon adsorber is less than 95 percent (as the California survey data mentioned earlier suggests), the cost effectiveness would be even higher. Because this additional cost of control is quite high for the additional amount of emission reduction benefit achieved, the EPA does not consider this level of control reasonable for an existing dry-to-dry machine located at a major source.

The EPA has elected to control emissions from area sources using GACT. Generally available control technology must reflect the generally available reduction in emissions, considering costs, energy, and impacts the Administrator considers reasonable. For a typical area source dry-to-dry machine, the incremental cost effectiveness of requiring dry-to-dry machines to operate with a refrigerated condenser and a carbon adsorber over the use of a refrigerated condenser alone is about $18,500 per ton of PCE if the carbon adsorber is achieving a high level of control efficiency (e.g., 95 percent). If the carbon adsorber is achieving a lower efficiency in actual practice then the incremental cost effectiveness would be even higher. As a result, the EPA does not consider this level of control reasonable for dry-to-dry machines located at area sources.

2.7.10 Other Control Options

Comment: Two commenters (IV-D-23, IV-D-25) requested that vapor barriers be required to prevent seepage to adjacent apartments. One commenter (IV-D-23) suggested that dry cleaning facilities located in close proximity to residential buildings or food service establishments be required to have vapor barriers on

all floors, walls, and ceilings to separate the dry cleaning facility from other areas in the building.

Response: Installing vapor barriers to prevent seepage of PCE emissions into adjacent living or working areas merely contains the emissions in the dry cleaning facility. Installing vapor barriers could lead to elevated PCE concentrations in the work areas and public areas of the dry cleaning facility, resulting in increased worker and public exposure at the dry cleaner. Vapor barriers would also be very expensive for a dry cleaning owner or operator to install. Estimates indicate that installation of a vapor barrier in a 30 by 50 by 20 foot dry cleaning facility would cost approximately $6,500. Vapor barriers, therefore, are considered unreasonable due to their high cost and their failure to control or reduce PCE emissions.

The Administrator agrees with the concerns expressed by many commenters about the potential impact of fugitive emissions. As mentioned earlier, to address these concerns, the final NESHAP requires control of fugitive emissions by leak detection and repair, as well as by other pollution prevention measures for all dry cleaning facilities. As a result, the NESHAP will significantly reduce fugitive PCE emissions from all dry cleaning facilities.

In a few cases, local agencies may find situations where they believe the use of vapor barriers may be warranted, such as the situation of a very large dry cleaning establishment without adequate ventilation located in an apartment complex. Cases such as this are best handled at the local level.

Comment: Four commenters (IV-D-10, IV-D-23, IV-D-24, IV-D-25) believed that no dry cleaner equipped with the proposed MACT or GACT controls and located adjacent to a residential dwelling or public establishment would be controlled sufficiently to prevent adverse impacts on the public. For this reason, the commenters recommended requiring additional ventilation requirements.

One commenter (IV-D-10) requested that specific local and general exhaust or ventilation requirements and process controls

be added. This commenter recommended adopting the NFPA Standard 32 for dry cleaning plants (1990 edition). These standards would require that all dry cleaning machines have an automatically activated exhaust ventilation system capable of maintaining a minimum air velocity of 100 feet per minute (fpm) through the loading door, whenever the door is open. These recommended standards also would require the use of general workroom exhaust ventilation, providing an air change every 5 minutes. The commenter explained that adopting these standards would help reduce fugitive PCE emissions, most of which are generated from the loading doors of dry cleaning machines. This commenter noted that some States include these requirements in their dry cleaning rules.

One commenter (IV-D-23) requested that the standards require good general ventilation (one air change every 5 minutes) with an exhaust vent terminating 5 feet above the roof line.

One commenter (IV-D-24) emphasized that ventilation requirements such as installing inductive fans that divert exhaust to a carbon adsorber are necessary to minimize fugitive emissions. Two commenters (IV-D-24, IV-D-25) added that ventilation exhaust requirements have been prescribed in several State regulations.

Response: Ventilation requirements at a dry cleaning facility in and of themselves would not reduce fugitive emissions. From the perspective of a national, uniform rule, the EPA believes it is more appropriate to focus on the use of equipment or techniques that prevent or control fugitive emissions rather than focus on ventilation requirements that merely divert, rather than reduce, emissions.

If dry cleaning facility ventilation systems were installed and the resulting exhaust routed through a control device (e.g., carbon adsorber), this would reduce fugitive emissions; however, it would be prohibitively expensive. The NESHAP, therefore, does not include dry cleaning facility ventilation requirements. On the other hand, the NESHAP does not preclude a dry cleaning facility from installing ventilation systems to meet OSHA

requirements. Moreover, where local authorities consider ventilation systems necessary, the NESHAP does not prevent or hinder local agencies in any way from requiring additional measures such as ventilation systems.

As mentioned earlier, the NESHAP requires the implementation of a leak detection and repair program, as well as other additional pollution prevention measures, to control fugitive PCE emissions at all dry cleaning facilities. These measures will achieve a substantial reduction in fugitive emissions at dry cleaning facilities.

Comment: One commenter (IV-L-01) referred to guidance for nonattainment areas in 1979 that suggested carbon adsorbers be installed on all dry cleaning facilities, regardless of their size. This commenter stated that because this level of control was considered reasonably available control technology (RACT), he questioned how anything less stringent could be considered MACT.

Response: The guidance concerning reasonably available control technology (RACT) issued in 1979 was just that--guidance to States concerning the emission control performance and costs associated with the use of carbon adsorbers as a means of reducing PCE emissions from dry cleaning facilities. The basic objective was to provide States a source of information for use in developing State Implementation Plans (SIP's). The guidance was not a rule or a regulation. States did not have to adopt regulations as part of their SIP based solely on this guidance and, as one would expect, the regulations adopted in response to this the guidance vary from State to State.

On the other hand, a NESHAP is a uniform national rule. The factors considered in developing a NESHAP are somewhat different from those considered in developing guidance. As a result, it is not surprising that the NESHAP differs to some extent from the guidance, just as the rules developed by States differ from the guidance.

Comment: Two commenters (IV-D-24, IV-D-25) requested that the regulation include appropriate restrictions on selling used dry cleaning machines to ensure that these machines are subject

to MACT or GACT requirements. One commenter (IV-D-25) thought that the EPA should prohibit the sale of old machines.

Response: The NESHAP does not exempt used dry cleaning machines. The NESHAP applies MACT or GACT to a dry cleaning machine depending on whether the source is a major source or an area source. All major sources (whether they use original or used equipment) must meet MACT, and all area sources (whether they use original or used equipment) must meet GACT.

Prohibiting the sale of old machines just because they are old is unreasonable. With proper operation and maintenance, old machines can operate as well, in terms of PCE emissions, as new machines of the same type and will be required to meet the same emission control requirements. No basis exists, therefore, to restrict the sale of used equipment.

Comment: One commenter (IV-D-25) identified one pollution prevention option for industrial dry cleaners that he believed the EPA did not consider: water wash and detergent. The commenter asserted that this alternative, which can eliminate emissions altogether, should have been considered as MACT.

Response: Water wash and detergent is a poor substitute for PCE in many instances. Water may be an effective alternative to cleaning certain types of clothes; however, there are many fabrics--notably wools and silks--that can not be cleaned effectively in water. Other solvents, such as PCE, must be used. In the Design for the Environment Program, the EPA is evaluating the economic feasibility and performance of a potential alternative wet cleaning process, which does not use PCE.

For the most part, water is not a substitutable alternative for PCE. In some cases, as noted in the background information document for the proposed NESHAP, industrial sized machines are switching over to water wash because water can be used effectively to clean linens and uniforms. However, this is only one small portion of the dry cleaning industry and this situation has limited applicability.

Comment: One commenter (IV-D-27) thought that no-vent dry-to-dry machines should not be allowed as a control option in

the NESHAP. The commenter explained that vented dry-to-dry machines turn on a fan when the loading door is opened to create an inward draft of air to protect the operator and the work space from PCE vapors. No-vent machines do not use a fan for this purpose. The commenter submitted test data to illustrate that operator exposure to unvented PCE emissions can range from 200 to 1,000 ppm. This commenter argued that requiring no-vent dry-to-dry units is in direct conflict with OSHA's 25 ppm PEL. The commenter pointed out that this creates a discrepancy between the two regulations. The commenter observed that to comply with MACT for the proposal NESHAP, a dry cleaning machine cannot have a loading door fan, and to comply with OSHA regulations, a loading door fan is required.

Response: The NESHAP does not require the use of no-vent dry-to-dry machines. Either vented or no-vent dry-to-dry machines may be used to comply with the NESHAP. The best way to comply with the worker exposure requirements set out by OSHA is left to the discretion of the dry cleaning facility owner or operator, and nothing in the NESHAP precludes the owner or operator from complying with the OSHA requirements.

2.8 SELECTION OF FORMAT FOR STANDARDS

Comment: Four commenters (IV-D-22, IV-D-24, IV-D-25, IV-D-26) expressed concern about the PCE low solvent consumption exemption levels in the regulation. Two commenters (IV-D-22, IV-D-25) recommended that the exemption levels be based on pounds of clothes cleaned per year for an entire facility. One commenter (IV-D-22) noted that annual receipts may be more related to pounds of clothes cleaned than the amount of PCE consumed.

This commenter added that an exemption based on PCE consumption may improperly exempt machines that are already equipped with vapor controls needed to meet State or local control and leak repair standards. This commenter noted that his State currently enforces a reasonable achievable control technology (RACT) exemption level based on the amount of clothes cleaned per year. This commenter explained that to determine

whether affected facilities qualify for this exemption, they have to keep records of the pounds of clothes cleaned. The commenter stated that since most facilities usually weigh and record the amount of clothes loaded into their machines to avoid overloading, this additional recordkeeping for exempted facilities would not be burdensome.

Three commenters (IV-D-24, IV-D-25, IV-D-26) stated that they do not support the low solvent consumption exemption levels in the proposed NESHAP because there is no adequate documentation given to explain how these exemption levels were selected.

One commenter (IV-D-24) asserted that PCE consumption rates alone are not a valid surrogate for determining PCE emissions from dry cleaning machines. This commenter pointed out that PCE is released during the dry cleaning process from uncontrolled vents and exhaust pipes, auxiliary equipment that is used to filter and distill the PCE, evaporation during clothing transfer and handling, and equipment leaks during solvent transfer and from stored solid waste. The commenter stated that relatively small, improperly operated machines have the potential to emit more PCE than well-controlled, industrial dry cleaning machines and, for this reason, PCE consumption rates should not be used as a surrogate for PCE emissions when determining which dry cleaners are major sources.

Response: Annual PCE consumption is a reasonable indicator of PCE emissions. It is considered a better indicator of PCE emissions than the amount of clothes cleaned at a facility, because it is a more direct measure of PCE emissions.

In the dry cleaning process, all of the solvent consumed is emitted either as process vent emissions, fugitive air emissions, or contained in solid or liquid wastes. Air emissions of PCE (process plus fugitive) represent from 65 to 75 percent of PCE consumption; the remaining 25 to 35 percent of PCE is lost through PCE contained in wastes. Therefore, a reasonably direct relationship exists between PCE consumption and PCE emissions. Weighing the amount of clothes cleaned would not give as accurate an indication of the resulting PCE emissions or how well the

facility is controlled. Thus, PCE consumption is more directly linked to PCE emissions than the amount of clothes cleaned and, for this reason, is a more accurate measure of PCE emissions.

A dry cleaning owner or operator can readily track the amount of PCE consumed by the machines at his or her facility by saving receipts from solvent purchases. Weighing clothes and writing down this weight for every load of clothes cleaned would require an excessive amount of recordkeeping. Although some dry cleaning facilities may weigh each load of clothes cleaned and keep records of these weights for their own reasons (e.g., to meet the requirements of State or local regulations, or to avoid over loading) not all dry cleaning facilities weigh each load cleaned and fewer still keep records of the weight of loads cleaned. It would be too burdensome to require all dry cleaning facilities to weigh each load of clothes cleaned and maintain records of these weights when a more accurate option (e.g., PCE consumption) is available.

To accurately track PCE consumption, each dry cleaning owner or operator is required to compute a 12-month average of PCE consumption on the first day of each month by summing the of total amount PCE purchases over the last 12 months.

Comment: One commenter (IV-D-24) stated that the use of machine sizes as surrogates for estimating PCE emissions from dry cleaning facilities is not valid for determining the level of control required for new or existing dry cleaning machines. This commenter stated that the EPA identified a 100 pound (lb) dry-to-dry machine as having the potential to emit over 10 tons per year (tpy). The commenter referenced monitoring data to illustrate that improperly maintained dry-to-dry machines that are smaller than 100 lb have the potential to emit greater than 10 tpy of PCE. For this reason, the commenter stressed that a machine's size cannot be correlated to reflect its actual PCE emissions.

One commenter (IV-D-14) noted that the size of a dry cleaning machine is not the key determinant of its PCE consumption, and the reference to machine size in the last

sentence of section 63.320(d) of the proposed NESHAP is not necessary and should be deleted.

Response: The low solvent consumption levels in the NESHAP are based solely on the amount of PCE consumed at a facility and have no relation whatsoever to the size of the dry cleaning machine. Therefore, to avoid any confusion that may occur from section 63.320(d) of the proposal regulation, which refers to machine size, this provision was deleted in the final rule.

As discussed in the preceding comment, PCE emissions from a dry cleaning machine are most directly related to PCE consumption. Machine size is not an accurate predictor of PCE consumption or emissions.

Comment: Two commenters (IV-D-13 and IV-D-15) requested clear guidance on the EPA's interpretation of "potential to emit" because it would impact the major source or area source distinction for future section 112 standards.

These commenters argued that a source's "potential to emit" should be based on actual historical emission data and not on theoretically projected emissions assuming continuous operations. One commenter (IV-D-13) urged the EPA to clarify that all controls used to reduce emissions would be considered in determining a source's "potential to emit."

Both commenters cited statutory language, the legislative history of the Clean Air Act as amended, and recent court decisions to support the interpretation that a source's "potential to emit" is based on actual historical operating conditions and after application of installed controls.

First, the commenters quoted the definition of "major source" from section 112(a)(1) of the Act to include sources "that emit or has the potential to emit considering controls."

Second, the commenters turned to the legislative history and quoted from the Report of the Senate Committee on Environment and Public Works on S. 1630 (1989) to further support their interpretation that potential to emit should reflect actual operating conditions of the particular source.

Third, the commenters referred to recent decision by the Seventh Circuit Court of Appeals, which found that the EPA could not rely on assumed continuous operations in calculating potential to emit. The commenters summarized the Court decision stating that, where possible, the EPA should consider actual operating practices to form a realistic assessment of a source's emissions [Wisconsin Electric Power Company v. Reilly, 893 F. 2d 901 (7th Cir. 1990).] To further substantiate their interpretation, the commenters pointed out that in reaching a decision in the WEPCO case, the Court noted that a U. S. District Court had earlier reached the same conclusion about the EPA's continuous emissions presumption. The commenters added that, when regulating a source of emissions, the EPA must make a reasonable evaluation of the hours a typical source is likely to operate, taking into account industry practices and physical operating constraints as well as Federally enforceable permit limits.

The commenters stated that although the EPA considered the actual emissions of dry cleaning operations in developing the proposal rule, the preamble does not clearly articulate that position. In conclusion, the commenters urged the EPA to follow the clear direction of the Act as amended, the legislative history, and case law, and base a source's "potential to emit" on actual operating conditions after application of installed controls.

Response: The Act defines a major sources as one that emits or has the potential to emit more than 10 tons of a HAP per year, considering emission control. The commenters raised a number of issues with this definition. These issues, however, are not directly related to the proposed NESHAP nor were they raised by commenters representing the dry cleaning industry or by commenters with some interest in this industry. The two commenters, the Society of the Plastics Industry (IV-D-13) along with the Composite Fabricators and the Cultured Marble Institute (IV-D-15), have no relationship with the dry cleaning industry and even acknowledge they are not particularly interested in the

dry cleaning NESHAP, only in how interpretation of the Act would affect future MACT standards that may be developed for their industries.

The EPA believes that it would be unwise and inappropriate to resolve these complex issues solely in the context of the PCE dry cleaning NESHAP. Resolving these issues here in the dry cleaning NESHAP and then applying the result to all other source categories could create numerous unforeseen problems and impose a number of inequities on other sources for which NESHAP's are developed in the future.

Such issues are best considered and resolved in the context of the General Provisions, which will apply to all NESHAP's. The General Provisions are currently under development and are considering these issues as well as many other issues in light of the broad range of sources for which NESHAP's will be developed. The General Provisions will attempt to resolve these issues in a manner that is reasonable and equitable with regard to all sources.

Consistent with the Act, the statutory definition of a major source is included in the PCE dry cleaning NESHAP to distinguish major sources from area sources. In light of the severe and unreasonable impacts that would be imposed on the dry cleaning industry by requiring each dry cleaner to perform a test to determine if emissions exceed 10 tons per year, the NESHAP uses annual PCE consumption (in gallons) as a surrogate for determining sources that are likely to emit 10 tons per year or more.

2.9 EMISSION LIMITS AND PERFORMANCE TESTING

Comment: Six commenters stated that the NESHAP should contain some type of emission limits and performance testing. Three commenters (IV-D-24, IV-D-26, and IV-D-27) believed there should be requirements for both refrigerated condensers and carbon adsorbers. The other three commenters (IV-D-10, IV-D-22, and IV-D-25) believed emission limits and performance standards are needed only when using carbon adsorbers.

Three commenters (IV-D-24, IV-D-26, IV-D-27) stated that the NESHAP should include emission limitations and performance standards. One commenter (IV-D-24) recommended that the NESHAP include a 5 ppm emission limit and that a relatively simple monitoring device could be used to measure this level. This commenter was aware of several cases where the control equipment had been installed and appeared to be working when, in fact, it was not. This commenter stated that by using emissions testing to identify this problem, control effectiveness had substantially increased following relatively minor repairs (such as cleaning the prefilter).

Another commenter (IV-D-26) added that there are rules in several States that contain emission limits and performance standards. This commenter stated that these rules have been effective in ensuring that PCE emissions are kept to a minimum to protect public health.

One commenter (IV-D-27) asserted that requiring the plant owner or operator to follow work practices without any performance test cannot achieve the prescribed emission reduction. This commenter argued that the easiest, safest way to control emissions and have a viable standard is to establish and enforce an emission limit through performance testing. The commenter ventured that if a permit or license program is developed, then the cost of periodic performance testing can easily be recouped by such permit or license fees.

Three commenters (IV-D-10, IV-D-22, IV-D-25) believed that the NESHAP should include emission limitations and performance standards for carbon adsorbers. One commenter (IV-D-10) thought that specifying an emission limit for carbon adsorbers is important because specifying steam stripping conditions alone is not enough. The commenter stated as an example if a carbon adsorber is not properly maintained and the manufacturer's prefilter is tampered with or it deteriorates, the carbon adsorber can become contaminated by lint, and its removal efficiency is drastically reduced. The commenter pointed out that the proposed standards do not address these types of

problems. This commenter also requested that the use of portable halogenated organic emission detectors mentioned in the proposed regulation should be further evaluated and required.

One commenter (IV-D-22) remarked that although a desorption frequency requirement in a standard is an important means to avoid breakthrough of the carbon adsorber, establishing an unacceptable PCE outlet concentration, such as 100 ppm, should also be considered. This concentration level could indicate problems with the carbon adsorber, such as reduced bed capacity or improper steam stripping.

Response: As discussed in the proposal preamble, the cost of requiring an owner or operator to undertake a full-fledged performance test to demonstrate compliance with emission limits based on the use of refrigerated condensers or existing carbon adsorbers would be expensive ($3,000 to $5,000), especially compared to the cost of this emission control equipment ($6,000 to $8,000). The additional cost of such a performance test, therefore, would create a significant impact by almost doubling the cost that the standard would impose.

The economic analysis conducted prior to proposal indicated that many operators would likely experience difficulty in obtaining capital to purchase emission control equipment. To preclude unreasonable economic impacts, the NESHAP does not require vent controls on existing sources with annual PCE consumption of less than 140 gallons per year for sources with dry-to-dry machines or 200 gallons per year for sources with transfer machine systems. Imposing additional costs by requiring a full-fledged performance test to determine compliance would add significantly to the economic impact of the NESHAP and would result in raising these low solvent consumption exemption levels for existing sources and decrease the emission reductions achieved by the NESHAP. Consequently, imposing such a requirement on dry cleaning facilities was considered unreasonable.

The concerns of the commenter regarding poor operation and maintenance of equipment, however, are well founded. There is,

of course, considerable incentive for an owner or operator to properly operate and maintain dry cleaning and emission control equipment. Having invested what for most dry cleaning facilities will be a substantial sum of money in this equipment, properly operating and maintaining it will provide some return in terms of recovered PCE. This will result in lower PCE consumption and reduce the dry cleaner's operating costs attributable to PCE purchases.

Beyond this economic incentive, however, the final NESHAP requires the owner or operator to follow the equipment manufacturer's specifications regarding proper operation and maintenance of equipment. In addition, the NESHAP requires the owner or operator to maintain a log containing information on the proper operation and maintenance of control devices.

To help dry cleaners determine that the control devices are operating properly, periodic monitoring is also required in the final NESHAP. If the control device used to achieve compliance is a refrigerated condenser, the owner or operator is required to measure the temperature on the outlet side of the refrigerated condenser once per week. For refrigerated condensers used with transfer system dryers or reclaimers, or dry-to-dry machines, the temperature of the exhaust gas-vapor stream must be measured. For refrigerated condensers used with transfer system washers, the difference in temperature between the inlet perchloroethylene-air gas-vapor stream and the exhaust gas stream must be measured. Measurements must be taken once per week at the end of the cool-down cycle prior to door opening. Records of the date and this temperature measurement must be kept in a log maintained on site.

If the control device used to achieve compliance is an existing carbon adsorber, the owner or operator is required to measure the PCE concentration in the carbon adsorber exhaust stream once a week during the last aeration cycle prior to a scheduled desorption using a colorimetric detector tube. Records must be kept in a log (maintained on site) on the date of

desorption, and the date and PCE concentrations measured using colorimetric detector tubes.

Finally, the NESHAP requires that copies of the equipment manufacturer's specifications be retained on site. All of the above requirements will ensure proper operation and maintenance of equipment and will also ensure this equipment achieves the emission control performance it is capable of achieving.

One commenter suggested that a State enforcement agency could purchase an instrument to measure the emissions (such as a portable photoionization instrument, which the commenter estimated would cost about $5,000) and undertake a performance test on behalf of the dry cleaner. The costs would be recovered through a permit fee imposed on the dry cleaner. Presumably, the State would not attempt to make a profit from this service, but would recover the full costs of this service from the permit fee. Also, presumably the State would employ professionally trained personnel to undertake this test as well as impose the same quality assurance or quality control procedures as a reputable emission testing contractor employs to ensure the results of the testing are accurate.

In such a situation, the only difference in costs to the dry cleaning facility, whether the State performed the testing or a contractor performed the testing, would be the profit factored into the contractor's service. Although this might lower the costs of testing by some degree, the cost imposed on the dry cleaner would still be substantial and, in the Administrator's judgment, unreasonable. On the other hand, if a State wishes to require performance testing the NESHAP does not preclude this approach.

2.10 SELECTION OF EQUIPMENT AND WORK PRACTICE SPECIFICATIONS

2.10.1 Operator Training Course

Comment: Four commenters (IV-D-10, IV-D-25, IV-D-27, IV-D-28) stated that there is a need to specify and require dry cleaning operator training and certification. One commenter (IV-D-10) pointed out that many dry cleaning facility operators are not properly trained to operate and maintain control

equipment, often resulting in excessive process and fugitive PCE emissions.

One commenter (IV-D-28) remarked that several States have found that, even with adequate control devices, many dry cleaners are still out of compliance with their regulations because of poor work practice procedures. This commenter suggested that an operator training course be developed by the EPA and then implemented through the State permit programs. This commenter added that the State permit fees collected under Title V could be used to help subsidize the cost of the operator training or certification. This commenter believed that such a training program would significantly improve work practice procedures.

One commenter (IV-D-27) noted that to reduce PCE emissions attributable to leaks from dry cleaning equipment due to improper maintenance and repair, the proposed NESHAP requirements for self-inspection and good housekeeping procedures might have a chance of success if certification or a training program were started to upgrade the performance level and knowledge of both plant owner or operator and repair mechanics. The commenter suggested that a training or certification program be conducted through the various existing dry cleaner associations at minimal costs to the participants.

The commenter argued that unless the operator is periodically tested to maintain certification, there is a good chance that equipment will not be properly maintained. As an illustration, the commenter cited the case of a no-vent refrigerated condenser controlled dry-to-dry machine where exhaust levels at the loading door exceeded 800 ppm, and the refrigerated condenser was found to be not operating properly.

Another commenter (IV-D-25) suggested that vendors of dry cleaning equipment could be required to train dry cleaners in their correct operation. This commenter added that multi-lingual instruction should be provided where necessary. The commenter recommended that new equipment could be sold with service contracts to ensure that machines are properly maintained.

Response: Operator training is provided by vendors and distributors. All provide training manuals with their equipment. In addition, all of the distributors provide some type of on-site operator training and are in close contact with owners during the first weeks after installation of their equipment. Some also offer follow-up or "refresher" training courses, and all provide telephone numbers for owners to contact them with questions or problems. Operator training, therefore, is already provided by both vendors and distributors of dry cleaning equipment, and it would be inappropriate and unnecessary to require additional training.

Once an owner or operator has been trained in the proper operation of the dry cleaning equipment, it is in his or her best interest to train the employees and ensure they are also operating the equipment properly. Proper operation has an immediate payback in terms of the cost savings gained through solvent recovery.

2.10.2 Enforceability

Comment: Two commenters (IV-D-22, IV-D-28) questioned the wording of section 63.322(h) of the proposal, which gave requirements for the period of time in which repair parts needed to be installed after their receipt. One commenter (IV-D-28) stated that section 63.322(h) of the proposal NESHAP would be difficult to enforce because of the wording "within a reasonable period of time after receipt." This commenter suggested that it would be helpful to the agency responsible for enforcement and to the dry cleaner if the regulation specified what is expected for a reasonable amount of time. This commenter recommended that the section be written to specify a specific time allowed for repairs.

The other commenter (IV-D-22) stated that section 63.322(h) requires the immediate repair of a leak, the purchase of repair parts within 3 working days, and the installation of repair parts within a reasonable period of time. If the EPA believes the facility should be allowed to operate while repair equipment is on order, the commenter suggested that a "delay of repair"

provision be included along with appropriate recordkeeping and possibly reporting of the "delay of repair."

Response: The EPA agrees with the commenter that the NESHAP needs to be specific and not ambiguous. In addition, adding specific time periods into the regulation will make it easier for dry cleaning owners or operators to achieve compliance with the standards as well as for States and the EPA to enforce the standards. For these reasons, the phrase in section 63.322(h) of the proposal NESHAP, which reads "within a reasonable period of time after receipt," has been changed in the final rule to read "within 5 working days after receipt." This amount of time should be sufficient for a dry cleaning owner or operator to install a replacement part that has arrived for the machine.

During development of the standard, consideration was given to a requirement that a dry cleaning machine be completely shut down until repairs are completed. However, this approach was rejected in favor of specifying a limited period of time in which repairs must be made. Emissions from individual, specific leaks are likely to be small. In comparison, the lost revenues of not permitting the dry cleaner to clean clothes in the interim until the repair is made would be large, and is considered unreasonable.

Comment: One commenter (IV-D-28) expressed concern that section 63.322(i) of the proposal regulation would be difficult to enforce because of the wording "which are impervious to the solvent and chemical reaction of the perchloroethylene." The commenter suggested that the regulation specify which materials are impervious to the solvent and chemical reaction of PCE so that both the enforcer and the dry cleaner know what is acceptable. The commenter also recommended changing the phrase "tightly sealed containers" to "containers that allow no vapor loss," because it would be easier to enforce.

Response: As the commenter pointed out, it is important to clarify the requirements of the proposal regulation so that it will be easier to enforce. It is also important to clarify the requirements of the regulation so that it will be easier for dry

cleaning owners and operators to understand. The commenter suggested including a list in the regulation of all of the materials that are impervious to the solvent and chemical reaction of perchloroethylene; however, such a list would be cumbersome and might be overly restrictive. Instead, the phrase that reads "which are impervious to the solvent and chemical reaction of perchloroethylene" has been changed in the final rule to read as follows:

> All perchloroethylene and wastes that contain perchloroethylene shall be stored in solvent tanks or solvent containers with no perceptible leaks.

Comment: One commenter (IV-D-28) noted that section 63.322(j) of the proposal regulation, which gave requirements for the period of time that the door of the dry cleaning machine remains open, would be hard to enforce because of the wording: "minimize the time the door of the dry cleaning machine remains open." The commenter recommended rewording this provision to be more specific: "the door shall be shut immediately after transferring clothes and shall remain closed at all other times."

Response: The EPA agrees that this provision as proposed would be difficult to enforce. Therefore, as the commenter suggested, the wording of the regulation which reads, "minimize the time the door of the dry cleaning machine remains open" is being changed in the final rule to read as follows:

> The door of each dry cleaning machine shall be closed, immediately after transferring articles to or from the machine, and shall remain closed at all other times.

Comment: One commenter (IV-D-28) noted that section 63.322(k) of the proposal regulation would be hard to enforce because of the wording "clean lint traps frequently." The commenter stated that the word "frequently" should be replaced with a more specific time. The commenter suggested that the regulation should specify that the owner or operator shall be in compliance with the manufacturers' specifications regarding the cleaning of lint traps.

Response: In an effort to make the final rule more effective and easier to follow, the EPA is combining several of the equipment operating requirements previously listed in section 63.322 of the proposal regulation into a single requirement:

> Each dry cleaning system shall be operated and maintained according to the manufacturer's specifications and recommendations.

This requirement would also apply to the operation and maintenance of the refrigerated condensers and carbon adsorbers because they are listed as part of the ancillary equipment of the dry cleaning system. By doing this, the list of individual requirements given in the regulation will be greatly reduced. Further, the requirement given in section 63.322(k) of the proposal specifying how frequently lint traps must be cleaned is no longer needed because the frequency of this activity will be determined by the manufacturer's specifications and recommendations.

Comment: One commenter (IV-D-25) stated that the EPA's definition of no "perceptible leaks" needs to be tightened. This commenter thought that a visual inspection is not sufficient to detect leaking components. The commenter requested that the EPA require the use of monitoring devices for periodic emissions testing.

Response: Leaks can be detected by visual, olfactory, tactile, or monitoring instrument methods. Due to the high cost associated with monitoring equipment, the EPA feels that it is unreasonable to require the use of monitoring instruments to detect leaks.

2.10.3 Carbon Adsorber Requirements

Comment: Two commenters (IV-D-10, IV-D-14, IV-D-22) questioned the desorption requirements given in the proposed regulation.

One commenter (IV-D-10) agreed with the desorption pressure specifications for carbon adsorbers required in section 63.322(c)(1) and (2) of the proposal NESHAP, if the

carbon adsorbers are full size. However, this commenter believed that smaller carbon adsorbers could be steam stripped at a lower pressure such as 5 pounds per square inch (psi) instead of the required 170 kilopascals (Kpa) (or 25 psi).

The second commenter (IV-D-14) noted that the steam pressure proposed in section 63.322(c)(2) of the proposal is approximately double the pressure recommended by current manufacturers of carbon adsorbers. The commenter argued that this proposed pressure level is not appropriate and may exceed certification levels for the adsorber as a pressure vessel. The commenter further argued that this proposed level would produce twice the amount of separator water, which would need to be sent to POTW's, than is generated if operating at a pressure of 85 Kpa.

The third commenter (IV-D-22) questioned whether the desorption frequency given in section 63.322(c)(1) of the proposal applies only to carbon adsorbers on dry-to-dry machines but not to carbon adsorbers on transfer machines. The commenter added that the basis for the given desorption frequency is not clearly defined in the background documents. This commenter stated that the basis for the desorption frequency appears in EPA-340/1-80-007.

This commenter suggested that any desorption frequency standards be stated as an equation or mathematical expression, such as the maximum number of dryer cycles (N) before desorption should equal the weight of adsorber carbon, in pounds (W), times 3.3 and divided by the dryer capacity, in pounds (C), or $N = 3.3\ W/C$.

Response: In the final rule, new and uncontrolled dry cleaning machines will be required to install refrigerated condensers. Therefore, only existing dry cleaning machines with existing carbon adsorbers will be allowed to use carbon adsorbers to meet the requirements of the final rule.

The EPA agrees with the commenter that exceeding certification levels for an existing carbon adsorber as a pressure vessel is not desired, and the regulation does not intend for the dry cleaner to operate an existing carbon adsorber

in such a manner. In drafting the carbon adsorber operational requirements that appeared in the proposal, information at that time indicated that one basic size and type of carbon adsorber was being used by dry cleaning owners and operators to control PCE emissions. The operating requirements given in the proposal were appropriate for operating this specific type of carbon adsorber. However, since that time, it has become apparent that other types of carbon adsorbers have been sold for use on dry cleaning machines. Some of these carbon adsorbers have their own specific operational requirements so that the requirements set out in the proposal may not be applicable. Operation manuals, operational specifications, and desorption schedules are provided by the manufacturer or vendor which specify the appropriate desorption steam pressure requirements for operating an individual carbon adsorber. Because this information is readily available, the owner or operator of an existing carbon adsorber must obtain and follow these specifications in operating the carbon adsorber.

The final NESHAP deletes all specific operational requirements and instead requires that each existing carbon adsorber be operated and maintained according to the manufacturer's specifications and recommendations. In addition, the dry cleaner must measure and record the concentration of PCE in the exhaust from an existing carbon absorber on a weekly basis. This information will aid the dry cleaner in determining if breakthrough has occurred. The manufacturer's specifications as well as the log containing PCE concentration measurements must be retained on site for 5 years.

Comment: One commenter (IV-D-10) suggested that specifications be included in the regulation regarding proper maintenance of carbon adsorber prefilters. The commenter explained that if this prefilter is not properly maintained, and the polyurethane foam filter type is replaced with an inferior filter media, then the adsorption efficiency of the carbon adsorber would be adversely affected by lint accumulation.

Response: As discussed above, manufacturers and vendors provide specifications for effective operation of existing carbon adsorbers, including requirements for proper maintenance of carbon adsorber prefilters. For this reason, the final NESHAP requires that each dry cleaning system including ancillary equipment shall be operated and maintained according to the manufacturers' specifications and recommendations.

Comment: One commenter (IV-D-14) thought that, in some cases, the interval required in section 63.322(c) of the proposal regulation for desorbing a carbon adsorber could be too long, and the carbon bed, therefore, could become saturated before desorption occurs.

The commenter noted that this situation could occur from either greater than normal amounts of PCE vapor flowing to the adsorber during the drying cycle or from reduction of adsorber capacity with age. The commenter suggested that an optimal desorption interval be determined based on individual adsorber performance for a given machine.

The commenter recommended that the first desorption after a permit is granted could use the 3 kilogram (kg) clothes per kg of carbon guidance as outlined in the proposed regulation. However, if this desorption frequency returns more PCE than 90 percent of the rated PCE capacity of the adsorber, the commenter suggested that the dry cleaner desorb more frequently until a desorption return is reached that is less than 90 percent of the rated capacity of the adsorber.

The commenter explained that the period between this optimal desorption frequency could then be correlated with the amount of clothes cleaned. In this way, the dry cleaner could adhere to the desorption schedule by monitoring the amount of clothes cleaned. The commenter also suggested that a periodic test should be conducted to confirm that the selected desorption interval is still appropriate. The commenter suggested amending the recordkeeping requirement in section 63.325(a)(3) of the proposal to require that a record be made of the amount of PCE

returned from each desorption so that adherence to the optimal desorption schedule can be verified.

Response: As stated elsewhere, only existing dry cleaning machines with existing carbon adsorbers will be allowed to use carbon adsorbers to meet the requirements of the final NESHAP. To control PCE emissions, existing carbon adsorbers must be properly operated, particularly in terms of desorption frequency. By following the manufacturers' specifications and recommendations for a dry cleaning system and ancillary equipment, the dry cleaner owner or operator should be able to operate the existing carbon adsorber effectively. Because there are several different types of carbon adsorbers being used to control PCE emissions from dry cleaning machines and each one has its own specific operational characteristics, the final NESHAP requires that each existing carbon adsorber shall be operated and maintained according to the manufacturer's specifications and recommendations. In addition, the dry cleaner must measure and record the concentration of PCE in the exhaust from the carbon absorber on a weekly basis. This information would aid the dry cleaner in determining if breakthrough has occurred and the carbon adsorber needs to be desorbed.

Comment: One commenter (IV-D-10) requested that the regulation specify that all exhaust from the washer, the dryer, the filter and purification system, the holding tanks, and the attendant piping and valves must be routed through the carbon adsorber or a solvent reclamation tank.

Response: The EPA agrees with the commenter that the term "entire exhaust," which is required to be routed through a carbon adsorber, refrigerated condenser, or equally effective control device, in section 63.322(b) of the proposal may be confusing. The term "entire exhaust" has been deleted from the NESHAP. The emissions from ancillary equipment are considered "equipment leaks" which are addressed elsewhere in the final regulation.

2.10.4 Refrigerated Condenser Requirements

Comment: One commenter (IV-D-12) requested a clarification in section E of the preamble that reads, "these operating

specifications include maintaining the temperature of the outlet side of the refrigerated condenser at less than or equal to 4.4 °C (40 °F)." The commenter stated that the word "maintaining" does not describe the actual refrigerated condenser air temperature cycle.

The commenter thought that the preamble description needed to be restated to include an outlet temperature level of 40 °F at the end of the drying or cool down cycle. The commenter stressed that the 95 percent efficiency for dry-to-dry vented machines depends upon maintaining the refrigerated condenser outlet temperature below 40 °F at the end of the drying or cool down cycle. The commenter attached a report with test data to support this claim.

Another commenter (IV-D-14) recommended that the beginning of section 63.322(d)(1) of the proposal be revised to read:

> (1) No exhaust gases shall be vented to the atmosphere or the door opened on a refrigerated machine until the air-vapor stream temperature. . . .

The commenter stated that the proposed wording could have been read literally to prevent the drying cycle on a dry-to-dry refrigerated machine from ever beginning because gases could not be "circulating through a ventless machine" until the proper temperature was reached. The commenter's suggested wording would prevent the door from being opened on a dry-to-dry refrigerated machine until the proper temperature is reached.

Response: The EPA agrees that the word "maintaining," which was used in the proposal preamble, could be misinterpreted to inaccurately describe the actual refrigerated condenser air-vapor stream temperature cycle. In addition, the EPA agrees that section 63.322(d)(2) as proposed would have prevented air from circulating through a dry-to-dry machine when the air-vapor stream temperature was not cooled sufficiently. This was not the intent of the regulation. Therefore, the final regulation requires the owner or operator to measure the temperature on the outlet side of the refrigerated condenser. For refrigerated condensers used with transfer machine system washers, the

temperature difference between the inlet and outlet air-perchloroethylene gas-vapor stream must be measured. For refrigerated condensers used with transfer machine system dryers or reclaimers, or dry-to-dry machines, the temperature of the exhaust gas stream must be measured. Measurements should be taken before the door on the dry cleaning machine is opened. The temperature shall be less than or equal to 7.2 °C (45 °F).

The temperature requirement of 4.4 °C (40 °F) included in the proposed NESHAP was an error. This requirement was intended to be 7.2 °C (45 °F). Consequently, the temperature requirement is 7.2 °C (45 °F) in the final rule. The measured temperature must be recorded on a weekly basis in a log to be maintained on site for five years.

In addition, the final NESHAP contains two other requirements for ensuring the proper operation of refrigerated condensers. The first requirement is that the dry cleaning system (including ancillary equipment such as the refrigerated condenser) shall be operated and maintained according to the manufacturer's specifications and recommendations. The second requirement is that there shall be no venting of the air-perchloroethylene gas-vapor stream to the atmosphere during any time the dry cleaning machine drum is rotating. These three requirements help ensure that the dry cleaning machine and the refrigerated condenser are being operated so as to minimize PCE emissions.

Comment: One commenter (IV-D-12) objected to the wording of section 63.322(a) of the proposal. This commenter submitted a sketch of a dry-to-dry machine retrofitted with a refrigerated vapor condenser to illustrate that an air tight diverter valve must be mounted externally between the refrigerated condenser and the dry-to-dry machine.

The commenter explained that during the drying or cool down portion of the machine cycle, the diverter valve is sealed to the atmosphere, directing PCE-laden vapor to the refrigerated condenser. The commenter explained that when the drying cycle is completed and the vented dry-to-dry door is opened, the diverter

valve damper automatically opens to the atmosphere and, at the same instant, seals off the vapor condenser freezing coil. This event allows the air to flow from the room into the dry cleaning machine over the cleaned clothes and directly into the atmosphere.

The commenter stated that if warmer, unsaturated room air is exhausted through the refrigerated condenser as allowed in the proposed rule, the air flow would pass over the frozen PCE/water laden coils of the refrigerated condenser and would result in uncontrolled PCE emissions.

Response: The EPA agrees with the commenter that drawing unsaturated room air over the coils of a refrigerated condenser would lower the control efficiency of the refrigerated condenser. For this reason, the final rule requires that a diverter valve be installed and operated on each dry-to-dry machine, transfer dryer, or reclaimer that draws room air into the machine when the door is opened. As the commenter pointed out, the diverter valve prevents room air from being drawn over the refrigerated condenser coils. Refrigerated condensers installed on transfer system washers, however, are configured to be single pass rather than multiple pass. In this instance, room air is drawn in through the machine door and routed directly over the refrigerated coil and vented out. The use of a diverter valve could not be used with this equipment configuration. Therefore, use of a diverter valve is not required on transfer machine system washers.

2.10.5 Purchase Orders

Comment: One commenter (IV-D-14) reported that dry cleaners, particularly smaller dry cleaners, frequently do not use written purchase orders when ordering replacement parts. The commenter noted that, instead, they typically telephone an order to their distributors. For this reason, the commenter recommended that written purchase orders not be required in the repair provisions of section 63.322(h) or the recordkeeping provisions of section 63.325(a)(2) of the proposal. The commenter suggested that the word "purchase" be deleted from

sections 63.322(h) and 63.325(a) and the words "verbal or written" be inserted in section 63.322(h) of the proposal.

Response: The EPA agrees with commenter that the owner or operator of a dry cleaning facility may not always use written purchase orders when obtaining replacement parts for a dry cleaning machine. For this reason, it would be inappropriate to require that dry cleaning owners or operators always use written purchase orders. The commenter noted that dry cleaning owners or operators typically telephone in orders for parts to their distributors. The EPA agrees that, if this is the case, a written record of their telephone conversation would suffice instead of a purchase order. The wording of this provision has been revised as follows in the final NESHAP:

> If repair parts must be ordered, either a written or verbal order for those parts shall be initiated within 2 working days of detecting such a leak.

2.10.6 Saturated Lint and Cartridge Filter

Comment: One commenter (IV-D-14) recommended that "saturated lint from the lint basket" be deleted from section 63.322(g)(10) of the proposal because it is not a component of a dry cleaning machine.

Response: The EPA agrees with the commenter that the saturated lint from the lint basket is not a component of a dry cleaning machine. Therefore, this item has been deleted from the list of dry cleaning system components that must be inspected for perceptible leaks.

Comment: One commenter (IV-D-14) suggested that section 63.322(g)(11) of the proposal be revised to read "cartridge filter housings" because a cartridge filter is not a component of a dry cleaning machine.

Response: The EPA agrees with the commenter that the cartridge filter housing is the component of the dry cleaning machine that could be a potential source of leaks rather than the cartridge filter. For this reason, the component listed in section 63.322(g)(11) of the proposal has been changed to cartridge filter housings in the final NESHAP.

2.10.7 Compliance Timetable

Comment: One commenter (IV-D-25) requested that the EPA accelerate the compliance timetable to 18 months for all sources. The commenter cited a trade association as saying they can comply more quickly. The commenter added that a year ago, the EPA had stated that dry cleaners would be given 18 months to comply because vendors had reported that they could supply the necessary equipment within 1 year.

Response: As the commenter pointed out, at proposal vendors did say that they could supply the necessary control equipment within 1 year. Since proposal, however, the low solvent consumption exemption levels have been lowered to include a greater number of dry cleaning facilities that must comply with the final rule. In addition, all new and existing uncontrolled dry cleaning machines are required to install refrigerated condensers, rather than given the option of refrigerated condensers or carbon adsorbers. Based on the increased demand anticipated for refrigerated condensers, vendors may no longer be able to supply control devices to all facilities requesting them within 18 months. For this reason, the compliance date for all existing facilities has been shifted to 36 months.

2.11 TEST METHODS AND MONITORING

Comment: One commenter (IV-D-28) stated that section 63.322(f) of the proposal NESHAP should be more specific by specifying that the owner or operator shall be in compliance with the manufacturer's specifications regarding how frequently to drain or dispose of cartridge filters.

Response: The EPA believes that 24 hours is a reasonable time to require for draining cartridge filters. For this reason, the proposed draining time has been retained in the final rule.

Comment: One commenter (IV-D-28) noted that section 63.324 of the proposal does not specify at what reading a portable halogenated-hydrocarbon detector triggers compliance. The commenter recommended that the NESHAP specify a specific concentration increment above the background level that would represent a significant leak. The commenter further suggested

that section 63.322 of the proposal require dry cleaners to use a portable detector at some specific time frequency (such as every 3 months or every 6 months) to detect those leaks that are not visually apparent.

Response: Leaks on dry cleaning machines can be detected through visual or olfactory inspection. The use of a portable halogenated detector is not required and, therefore, there is no reason to establish a specific leak detection level or a frequency requirement.

Comment: One commenter (IV-D-14) urged that the definition of perceptible leak be revised to specifically state that use of a halogenated hydrocarbon detector is permitted but not required. The commenter thought that the definition of perceptible leak read together with the inspection and repair requirements in paragraphs (g) and (h) of section 63.322 of the proposal seemed to nullify the option of inspecting leaks either visually or with a detector.

Response: Visual and olfactory detection are very effective for locating leaks, therefore, the use of a halogenated hydrocarbon detector was not required in the proposal. Thus, reference to a halogenated hydrocarbon detector in the definition of perceptible leak has been deleted.

2.12 WORDING OF THE REGULATION

2.12.1 References to Other Subparts

Comment: One commenter (IV-D-28) stated that section 63.322(1) of the proposal regulation refers to 63.9(b)(2)(vi), which is located in Subpart A. The commenter suggested that this section be reworded to read "63.9(b)(2)(vi) of Subpart A" to make it clearer that this section is not located in Subpart M. The commenter suggested the same rewording be added in section 63.325(c) of the proposal regulation to clarify that 63.9(h) is found in Subpart A.

Response: The EPA agrees with the commenter that referencing section numbers that are found in other subparts without mentioning that these sections are found in other subparts may be confusing, especially for dry cleaning owners or

operators that may not be familiar with the organization of the Code of Federal Regulations. For this reason, every time a citation from another subpart is given, the NESHAP now notes what subpart contains that citation.

2.12.2 Clarifications

Comment: One commenter (IV-D-28) pointed out that section 63.325(d)(2) of the proposal, which refers to "830 liters per year (200 gallons per year) perchloroethylene" should read (220 gallons per year) perchloroethylene.

Response: The conversion from liters to gallons should have read 220 gallons per year.

Comment: Two commenters (IV-D-14, IV-D-28) noted that section 63.325(c) in the proposal, which refers to "the compliance dates given in section 63.322(c)" should read "the compliance dates given in section 63.322(e)."

Response: The citation to compliance dates has been corrected in the final NESHAP.

2.12.3 English Units

Comment: Two commenters (IV-D-10, IV-D-14) requested that English units, which are more familiar to dry cleaners, be included in the NESHAP for units of pressure and air flow. One commenter (IV-D-10) noted that 170 Kpa equals approximately 25 pounds per square inch (psi) and the air flow capacity of 0.3 cubic meters per second equals approximately 630 cubic feet per minute (cfm).

Response: The EPA agrees with the commenter that owners and operators of dry cleaning facilities would be more familiar with English units than with metric units because these are the common types of measurements that dry cleaners use. Because it is important that the NESHAP be understandable and easy to read for dry cleaner owners or operators, both English and metric units have been included.

Comment: One commenter (IV-D-12) questioned the English conversion of 0.3 cubic meters per second (m^3/sec) (0.1 cubic foot per second [ft^3/secs]) air flow through the carbon adsorber.

Response: The English conversion for an air flow of 0.3 m^3/sec through the carbon adsorber should be 10 ft^3/sec.

2.12.4 Definitions

Comment: One commenter (IV-D-14) recommended several changes be made in the definition section of the NESHAP. The commenter suggested the following revised definitions to five terms to remove any implication that filter elements can be regenerated:

> Cartridge filter means a discrete solvent filter unit, inserted in a multi-unit housing, which must be replaced periodically.
>
> Muck cooker means a device for heating diatomaceous earth filter material to drive off perchloroethylene vapors for reclaiming.
>
> Stills are defined as devices used to volatilize and recover perchloroethylene from contaminated solvent.
>
> Wet waste material means the filter muck from a diatomaceous earth filter or the residue from a still.

The commenter suggested replacing the definition for "regenerable filter material" with the following:

> Filter muck means the residue from a filter using loose diatomaceous earth which must be replaced periodically.

Response: In general, the EPA agrees with the commenter's suggested changes to the definitions and has incorporated them into the final NESHAP, except for the reference to "multi-unit housing" in the recommended definition of cartridge filter. Because some dry cleaners may not place their cartridge filter in a "multi-unit housing," this portion of the recommended definition has not been incorporated into the final NESHAP.

Comment: One commenter (IV-D-14) suggested inserting the word "system" after the word "transfer machine" in the definition of dry cleaning system to make the use of the phrase "transfer machine system" consistent throughout the NESHAP.

Response: The EPA agrees with the commenter that it would be clearer if the phrase transfer machine system is used throughout the NESHAP to describe both the transfer washer and

the transfer dryer. For this reason, the word "system" has been inserted after the word "transfer machine" in the definition of dry cleaning system to make the use of the phrase "transfer machine system" consistent throughout the final NESHAP.

Comment: One commenter (IV-D-22) requested that the word "existing" be defined to clarify which equipment is affected. The commenter noted that this term is used in paragraphs (b) and (c) of section 63.320 and paragraphs (b)(2) and (e) of section 63.322 of the proposal NESHAP.

Response: The term "existing" means any dry cleaning machine that was built prior to the date of proposal. To clarify the meaning of this term, a specific definition for "existing" has been included in the definition section of the final NESHAP.

Comment: One commenter (IV-D-22) requested that definitions be given in the NESHAP to distinguish between three terms used in section 63.322 of the proposal: "ventless machine," "vented machine," and "no-vent machine."

Response: Although different descriptions (ventless, vented, and no-vent) may have been used to describe the types of dry-to-dry machines in the proposed NESHAP, these descriptions are not necessary. Because requirements set out in the NESHAP are the same for all dry-to-dry machines regardless of whether they are vented or not, there is no need to differentiate between these terms. There are no common definitions of these terms throughout the dry cleaning industry. They mean something slightly different to different dry cleaners. Therefore, using the terms in the rule would be confusing to dry cleaners. For this reason, all mention of these terms was deleted from the final NESHAP.

2.12.5 Applicability

Comment: One commenter (IV-D-10) suggested revising section 63.320(a) of the proposal to delete "dry cleaning dryers," because dryers are a part of a transfer machine system, and to replace the word "facilities" with the word "plants."

Response: The EPA agrees with the commenter that it is redundant to include the phrase "dry cleaning dryers" in

section 63.320(a) of the proposal because a transfer machine system as defined in section 63.321 includes both a transfer washer and a transfer dryer. Therefore, the phrase "dry cleaning dryers" has been deleted from section 63.320 in the final NESHAP.

The term "facility" was selected over the term "plant" in drafting the NESHAP because the word "plant" connotes a larger, industrial sized dry cleaning establishment. Because the majority of dry cleaning establishments are small, family operated businesses, it is more appropriate to call them facilities.

2.12.6 Standards

Comment: One commenter (IV-D-14) suggested that the word "liquid" be inserted in front of the word "perchloroethylene" each time it appears in paragraphs (i) and (k) of section 63.322 of the proposal. The commenter believed that this addition would make the storage and lint-cleaning requirements more precise by specifying that liquid PCE and waste containing liquid PCE are to be stored in tightly sealed containers. The commenter observed that, otherwise, dry lint containing only trace elements of PCE would also have to be so stored, which would be unnecessary and burdensome.

Response: Disposal of hazardous wastes must be conducted in accordance with the Resource Conservation and Recovery Act (RCRA). If the total wastes generated during the dry cleaning process, including lint and filter muck, contain PCE in a sufficient quantity to qualify as a hazardous waste under RCRA, then that waste must be stored in a container that does not leak. Because the requirements of section 63.322 apply to liquid PCE wastes as well as to solid waste containing PCE, it is not appropriate to incorporate the commenter's suggestion into the final NESHAP.

2.13 EQUIVALENCY

Comment: Three commenters (IV-D-24, IV-D-26, IV-D-30) expressed concern that States were not delegated authority in the proposal to implement and enforce equivalent or more protective State requirements. One commenter (IV-D-24) stated that the EPA

should recognize that 22 States currently regulate PCE emissions from dry cleaning facilities and that these facilities will be required, at a minimum, to comply with these State regulations even after a NESHAP for PCE is promulgated. Two commenters (IV-D-24, IV-D-30) emphasized that States must retain the right to take appropriate actions to implement effective emission control strategies to protect public health within their jurisdictions.

All of these commenters strongly opposed section 63.326 of the proposal that limits the authority for approving alternative control equipment and procedures proposed by individual dry cleaning sources to the EPA alone. One commenter (IV-D-24) believed that the EPA's retention of this delegation of authority would also negatively impact the operating permit process.

One commenter (IV-D-30) insisted that States be allowed to enforce a State standard that is different from the Federal standard if it is of equivalent or greater stringency. This commenter cited section 112(l)(1) of the amended Act, which allows the EPA to approve a State program that provides for "partial or complete" delegation of the Administrator's authority. This commenter also cited section 112(d)(7) which reads:

> No emission standard or other requirement promulgated under this section shall be interpreted, construed, or applied to diminish or replace the requirements of a more stringent emission limitation or other applicable requirement established pursuant to . . . this Act or a standard issued under State authority. (emphasis added by commenter)

This commenter argued that if a State were not allowed to implement its own standard instead of the EPA's (and both standards had to be implemented simultaneously), then two significant problems would occur: (1) it may be physically impossible for sources to comply with both standards; and (2) it likely would increase the administrative and financial burden on sources and regulatory agencies, with no additional public health benefit. The commenter mentioned that dual regulation could

result in undue financial and administrative burdens on small businesses. The commenter added that if a source is forced to comply with two sets of incompatible requirements, the source may not be able to operate at all in a particular State.

The commenter specifically suggested adding a new section to the proposed NESHAP. This commenter explained that this new section would explicitly allow a State to seek approval to implement and enforce 40 CFR Part 63, Subpart M by implementing and enforcing an alternative emission standard adopted by the State. The commenter explained that to receive approval from the Administrator, a State would have to demonstrate that the alternative emission standard would provide the same public health benefit as, or a greater benefit than, the standard promulgated pursuant to section 112(d) of the Act. The commenter added that the demonstration should include an analysis of the overall emission and risk reductions associated with each standard, specific to sources in the State.

The commenter also suggested modifying the first sentence in section 63.323(a) of the proposal to read:

> Upon written application from any person or State, the Administrator may approve the individual or Statewide use of equipment or procedures that have been demonstrated to his satisfaction to be equivalent in terms of reducing perchloroethylene emissions to the atmosphere, to those prescribed for compliance within a specified paragraph of this subpart.

Response: The EPA agrees with the commenters that States should be allowed to implement effective emission strategies to protect public health within their jurisdictions. In some cases, States may feel it is necessary to implement more protective air pollution control measures than those adopted in national standards to control local problems.

In addition, the EPA also agrees with the commenters that if different types of specific controls were required by the dry cleaning NESHAP and a State's standard, then it might be physically impossible to comply with both standards. For this reason, the NESHAP includes provisions for determining

equivalency that allow sources to use any means of controlling emissions that result in an equal or greater level of emissions reduction as that achieved through the use of the controls required in the NESHAP. These provisions will permit sources to achieve compliance with both State standards and the NESHAP. In fact, this type of approach fosters advances in control technology development and source reduction and other pollution prevention alternatives as a means for achieving compliance.

Finally, the EPA also agrees with the commenters that provisions limiting the authority to the EPA alone for making judgments regarding the equivalency of different equipment to control PCE emissions with the same or better performance than the control equipment required by the NESHAP is not warranted because section 112(l) of the Act would allow a State to request approval of a State's program that permits a source to seek permission to use an alterative means of emission limitation under section 112(h)(3), provided that the State demonstrated that is program would be no less stringent and that certain conditions were met. Section 112(l) authorizes States to submit programs to the Administrator for approval for implementing and enforcing emission standards. Section 112(l) also goes on to state that such programs may provide for partial, as well as complete, delegation of the EPA's authorities and responsibilities. The approval and delegation process is addressed in detail in the EPA's notice of proposed rulemaking: "Approval of State Programs and Delegation of Federal Authorities; Proposed Rules," published on May 19, 1993, (58 FR 29296).

As a result, the provision limiting the authority to judge the equivalency of different equipment to the EPA has been deleted from the final standards. Doing so, however, does not mean that these provisions will be "automatically" delegated to States upon application. In addition, delegating these provisions will not preclude the EPA from considering petitions submitted by various equipment suppliers or vendors and making equivalency determinations on a national level.

Comment: One commenter (IV-D-14) offered a suggestion for section 63.323 of the proposal, which allows alternative technologies to be used in lieu of the specified control devices. The commenter stated that a properly operating carbon adsorber exhausts approximately 25 parts per million (ppm) of PCE at 600 cubic feet per minute (cfm). The commenter included calculations to show that this exhaust is equivalent to 3.1 pounds of PCE emissions per day, assuming the adsorber operates 8 hours per day.

The commenter suggested that the EPA could specify in the equivalency provision that one possible method for demonstrating an alternative technology would be to show that emissions from a given control device would result in no more than 3.1 pounds of PCE emissions per day. The commenter pointed out that this approach would achieve similar emissions reductions without tying the alternative control to a particular PCE concentration, exhaust flow rate, or total exhaust time. The commenter believed that this approach could simplify the task of those considering or engaged in the manufacture of alternative control devices. The commenter believed that this equivalency approach could lead to the design and construction of simpler and less expensive alternative control technologies for controlling PCE emissions.

Response: As stated elsewhere, new and uncontrolled existing dry cleaning machines are required to install refrigerated condensers to comply with the requirements of the final NESHAP. Existing dry cleaning machines with existing carbon adsorbers built prior to promulgation will not be required to replace their carbon adsorbers with refrigerated condensers, but new carbon adsorbers are not allowed for process vent control. Therefore, potential alternative technologies will be evaluated based on equivalent performance to a refrigerated condenser rather than a carbon adsorber.

With regard to carbon adsorbers, however, the EPA does not agree with the commenter that 25 ppm is the normal exhaust concentration when the dry cleaning machine is not venting to the carbon adsorber and, in EPA's opinion, the assumption that a

properly operated carbon adsorber exhausts at a constant 25 ppm has not been verified. In any event, because the performance of carbon adsorbers in actual practice has been shown to be inferior to refrigerated condensers and because a refrigerated condenser is configured differently from a carbon adsorber, the approach suggested by the commenter is not appropriate for determining equivalency with the performance of a refrigerated condenser.

Requiring the same approach for demonstrating the equivalency of an alternative technology may not be appropriate for all types of new control technologies introduced to the market. For this reason, specific methods for demonstrating equivalency are left to the requestor seeking equivalency, based on the specific characteristics of the control technology.

Comment: One commenter (IV-D-19) expected to be requesting an equivalency determination for a new control technology in the near future. For this reason, the commenter requested guidance in seeking equivalency under section 63.323 of the proposal.

First, the commenter asked what type of information should be included about the control technology. The commenter thought that pertinent information would include: a general description of the equipment; a schematic of the equipment denoting its size; cost of the equipment (both when added to a new machine and when a machine was retrofitted); and energy requirements of the system.

Second, the commenter asked what was needed concerning process or fugitive emission data. The commenter asked what type of data must be collected and over what time period. The commenter wanted to know if the applicant is responsible for collecting baseline data on the particular piece of equipment prior to the control being added. The commenter wondered if the EPA would require monitoring data to be collected from more than one machine. The commenter also questioned whether the EPA would require the piece of equipment being used in the testing to already be used on a commercial basis. The commenter asked whether the EPA or its contractor would collect emissions data in addition to the data being collected by the applicant.

Third, the commenter inquired about efficiency determination. The commenter asked how the EPA would calculate the efficiency of the particular control technology being considered. The commenter also questioned that if a system reduces both process and fugitive emissions, would the EPA consider both reductions in its determination.

Fourth, the commenter asked about the overall approval process. The commenter requested an outline of the steps and an estimate of the time needed to undergo the equivalency approval process.

Response: In answer to the commenters' questions, it is difficult to specify what information must be submitted without knowing some details of the emission control technology or system for which a determination of equivalency is requested. In addition, a description of this information must be broad and general in nature to accommodate all possibilities. It is possible, however, to be more specific, and the final NESHAP specifies that the following information must be submitted:

- Diagrams, as appropriate, illustrating the emission control technology, its operation and integration into or function with dry-to-dry machine(s) or transfer machine system(s) during each portion of the normal dry cleaning cycle;
- Information quantifying vented PCE emissions from the dry-to-dry machine(s) or transfer machine systems(s) during each portion of the dry cleaning cycle with and without the use of the candidate emission control technology;
- Information on solvent mileage achieved with and without the candidate emission control technology. Solvent mileage is the average weight of articles cleaned per volume of PCE used;
- Identification of maintenance requirements and parameters to monitor to ensure proper operation and maintenance;
- Explanation of why this information is considered accurate and representative of both the short-term and long-term performance of the candidate emission control technology on the specific dry cleaning system examined;

- Explanation of why this information can be extrapolated to dry cleaning systems other than the specific system(s) examined;

- Information on the cross-media impacts (to water and solid waste) of the candidate emission control technology and demonstration that the cross-media impacts are less than or equal to the cross-media impacts of a refrigerated condenser.

2.14 MISCELLANEOUS

2.14.1 Classification of Perchloroethylene as a Volatile Organic Compound

Comment: One commenter (IV-D-03) agreed that PCE needs to be controlled as an air toxic. However, the commenter believed that including PCE as a volatile organic compound (VOC) has created a problem. The commenter pointed out that the EPA published a Federal Register notice on October 24, 1983, (48 FR 49097) proposing to add PCE to the list of exempt VOC compounds. The commenter stated that a final action on the PCE photochemical reactivity issue is being withheld until the PCE toxicity issue is resolved.

The commenter stated that, pursuant to the definition of VOC (which includes PCE), and the EPA and State guidelines, his air pollution control district was required to issue emission reduction credits (ERC's) for substantial reductions in PCE emissions at a single source (107 tons per year). The commenter explained that, under the existing VOC definition, these ERC's must be used to offset emission increases from new sources of VOC whose photochemical reactivity is not negligible, resulting in a net increase in ozone precursors. The commenter argued that the use of PCE ERC's as offsets exacerbates the severe ozone nonattainment problem in his area because the emission increases in reactive compounds would not be truly offset.

The commenter recommended that the EPA finalize its proposal to list PCE as an exempt VOC compound, concurrent with final action to control PCE dry cleaners.

Response: The EPA recently proposed adding PCE to the list of compounds exempt as a VOC on the basis that it has negligible

photochemical reactivity and thus does not contribute to tropospheric ozone formation. A proposed rulemaking describing the addition of PCE to the VOC exempt list has been published in the Federal Register (57 FR 48490, October 26, 1992). The outcome of that rulemaking will have no impacts on the dry cleaning NESHAP.

2.14.2 Carcinogen Risk Assessment Classification of Perchloroethylene

Comment: Two commenters (IV-D-14, IV-D-21) expressed views on carcinogenic risk. One commenter (IV-D-14) urged the EPA to recognize in the preamble to the final NESHAP the recommendations of its own Science Advisory Board (SAB) regarding revisions in the Guidelines for Carcinogen Risk Assessment pertaining to the classification of PCE. The commenter quoted an excerpt from the document, Health Effects Assessment of Perchloroethylene, EPA-SAB-EHC-91-013, which stated that there is "no compelling evidence of human cancer risk" from exposure to PCE. The commenter recognized that, at this time, it cannot be conclusively stated whether or not PCE is a potential carcinogen and, therefore, concurred with the SAB that further research be pursued to study the health risks of PCE.

Another commenter (IV-D-21) submitted a paper and scientific articles to support that no adverse health effects would be expected at environmental or even workplace levels of PCE exposure.

Response: In its evaluation of PCE, the SAB recognized the difficulty of placing PCE into one of the categories designated in the current Guidelines for Carcinogen Risk Assessment. Therefore, in the Health Effects Assessment of Perchloroethylene, the SAB recommended that, "when the Guidelines are revised, their flexibility should be endorsed and strengthened, and that exceptions to a strict categorization are a practical necessity" (EPA-SAB-EHC-91-013; page 7).

The EPA is currently revising the guidelines. This effort is not intended to be a solution to the uncertainty about the carcinogenicity of PCE or any other specific agent. Revisions

are being considered to ensure that the guidelines reflect current knowledge about carcinogenic risk.

At this time, it is premature to discuss whether the revisions to the guidelines may affect earlier classifications of chemicals, and the EPA does not believe it pertinent to speculate.

Comment: Two commenters (IV-D-24, IV-D-25) cited evidence to support that perchloroethylene should be considered a probable human carcinogen. One commenter (IV-D-24) objected to the Science Advisory Board position presented in the proposal NESHAP which stated that "in the spirit of flexibility encouraged by the Guidelines, our best judgment places this compound on a continuum between these two categories." This commenter asserted that the qualitative assessment of the carcinogenicity of PCE (as presented in the NESCAUM Health Evaluation Document for PCE, 1986) concludes that sufficient animal evidence would constitute consideration of PCE as a probable human carcinogen. This commenter further argued that evidence for carcinogenicity based on qualitative indicators of possible cancer risk to humans includes corroboration of carcinogenicity by more than one investigator; multiple routes of exposure (oral, gavage, and inhalation); multiple species; diversity of primary tumor locations and types; evidence of genotoxicity and structure activity relations with other carcinogens. Based on findings of this evaluation, this commenter concluded that PCE is a probable human carcinogen and may present both an occupational and public health risk to exposed populations, particularly to people living near the dry cleaning facility.

The other commenter (IV-D-25) pointed out that although there is some debate about the carcinogenic classification of PCE, experts agree that exposure increases cancer risk and should be limited. This commenter cited two studies by the National Toxicology program, which recommended:

> the overall carcinogenic evidence for tetrachloroethylene would be elevated to Group B2 meaning that tetrachloroethylene should be considered a "probable human carcinogen."

This commenter stated that the International Agency for Research on Cancer (IARC) also classifies perchloroethylene as a B2 carcinogen.

This commenter cited a letter from the SAB to the Administrator:

> As perchloroethylene illustrates, the distinction between the B2 and C categories can be an arbitrary distinction on a continuum of weight of evidence . . . From a scientific point of view, it seems inappropriate for EPA and other agencies to regulate substances that are classified B2 and not to consider regulation of compounds classified as C, regardless of the level of human exposure . . . A substance classified as C (limited evidence in animals) for which human exposure is high may represent a much greater potential threat to human health.
>
> EPA and other agencies (including those in state governments) may, therefore, wish to take steps to reduce high exposures to substances in the C category whenever there appears to be a potentially significant threat to human health . . . Indoor exposure to perchloroethylene, such as might be found in dry cleaning establishments not using the equivalent of good industrial hygiene practices, could merit actions under this criterion.

Response: The EPA uses the Guidelines for Carcinogen Risk Assessment, published in the Federal Register on September 24, 1986, to determine the appropriate weight-of-evidence classification for a chemical. At the present time, with the current guidelines, the EPA has not determined whether PCE would be classified more appropriately as a B2 or as a C carcinogen. Under the current guidelines, and with the present data, PCE could be viewed as a B2 carcinogen, or probable human carcinogen. This is, however, only one view in a range of views which cover the C to B2 range. The EPA Science Advisory Board (SAB) presents the position that, "in the spirit of flexibility encouraged by the Guidelines, our best judgment places this compound on a continuum between these two categories." Uncertainty in the PCE data base leads the SAB to recommend its being classified on a continuum between B2 and C. The EPA has not adopted any position, but is considering all views on the classification of

PCE while also promoting research to reduce uncertainty in the data base for PCE.

The SAB also states that "a substance classified as C (limited evidence in animals) for which human exposure is high may represent a much greater threat to human health" than a substance classified as B2. The EPA agrees that, since cancer risk is likely to increase as exposure to the cancer-causing agent increases, exposure to the agent should be limited. In evaluating the cancer risk posed by a chemical, the EPA takes into account the potency, weight-of-evidence classification, potential for exposure to the chemical, and other factors relating to behavior of the agent in the environment or in the exposed individual. The high potential for exposure to PCE gives support to its being regulated.

2.14.3 Public Health Impact

Comment: One commenter (IV-D-24) thought that the public health impact of the proposal NESHAP was not evaluated sufficiently. This commenter stated that the EPA presented a public health impact analysis based on a qualitative toxicological assessment of PCE but neglected to evaluate other criteria for determining public health impacts from PCE exposure, such as the location of emission points and the potential for exposure, fate and transport of the emissions (half-life, deposition characteristics, etc.) or the activity patterns of potentially exposed populations.

This commenter asserted that the population model the EPA used to project national impacts was not appropriate for assessing the localized public health impact from area sources. The commenter believed that this type of analysis dilutes the actual public health impacts resulting from exposure to high concentrations of fugitive PCE emissions from dry cleaners.

Response: The level of detail recommended by the commenter for the evaluation of public health impacts is more extensive than necessary for this particular rulemaking. A population model that projects national impacts was not used to assess the localized public health impact of emissions from area sources for

this rulemaking. Estimated national emissions reductions are discussed in the proposed standard, but impacts on public health were considered in a qualitative assessment, as noted by the commenter.